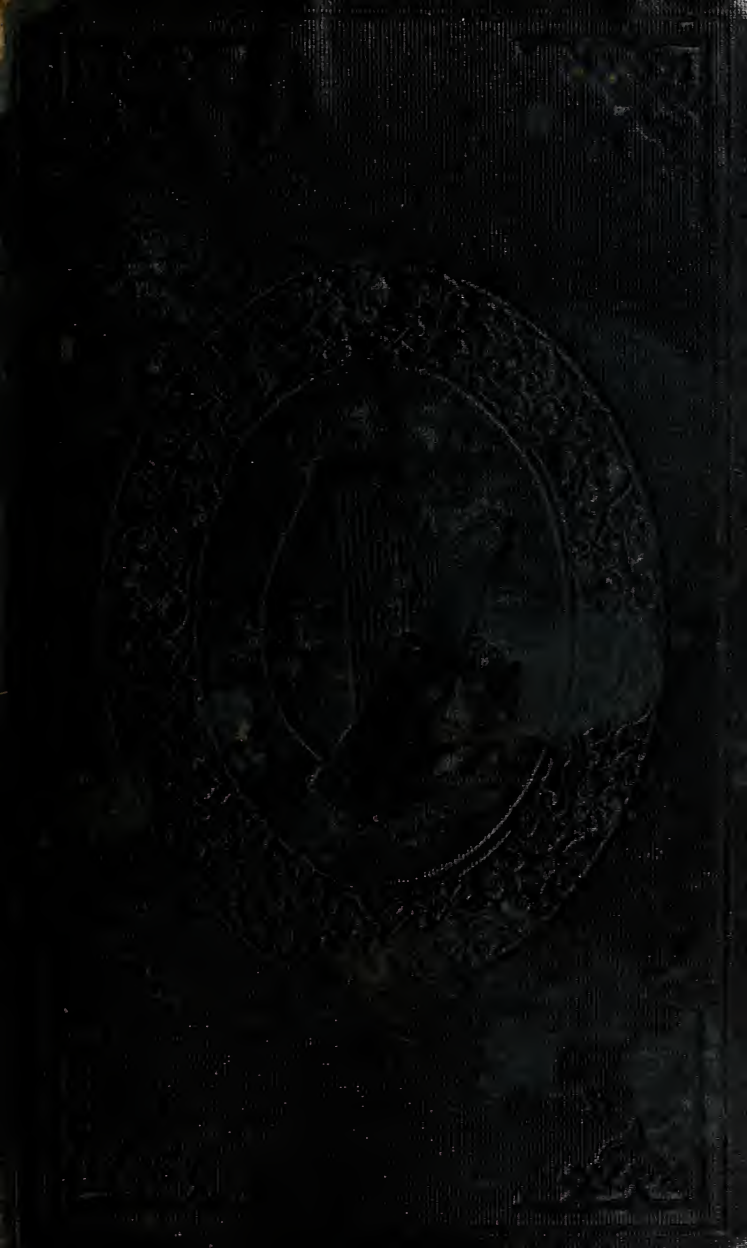

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FRONTISPIECE.

A VISION OF IRELAND.

In the foreground is seen a partially reclaimed bog; a stream passing through the centre shows plainly by its banks, covered by Nature with verdure from alluvial deposits, what drainage would effect. It is evening; the solitary figure, with his spade, sleeping or musing in the open air, expresses that his labour is ready, and all that is necessary, but the permission of the proprietor, for perfect reclamation and productiveness.

From the dying embers ascends a cloudy vapour, in which are developed his thoughts. First, is a scene of the past; he has been evicted by the agent, his cottage burnt before his eyes. Secondly, he is driven upon the highway to beg with a helpless family. Thirdly, his wife and children are in a wretched hovel, consumed by famine and sickness; he rushes forth in despair.

The descending vapours pourtray a dimly shadowed but too frequent future — robbery or murder; and lastly, the consequences.

Above all is a figure of Hibernia, with the scales of justice unequally balanced. Around, in the distance, is seen a better order of things: the good landlord observing his tenants' drainage improvements; the lands around well tilled; the cottage and the hall in close contiguity; the crops; the railways; the harbour; the shipping; and the fishing boats — all displaying employment, commerce, and plenty.

W. H. Smith, del.

J. W. Sleap, sc.

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A

TWELVE MONTHS' RESIDENCE

IN

IRELAND,

DURING

THE FAMINE AND THE PUBLIC WORKS,

1846 AND 1847.

WITH

SUGGESTIONS TO MEET THE COMING CRISIS:

Practical Suggestions to English and Irish Landholders, on Improved Agriculture, Reclamation of Bogs, Mosses and other Waste Lands; Physical and Social Aspect; The Famine and Public Works; Monetary Suggestions for Irish Property; Harbours and Fisheries.

BY

WILLIAM HENRY SMITH, C.E.

LATE CONDUCTING ENGINEER OF PUBLIC WORKS.

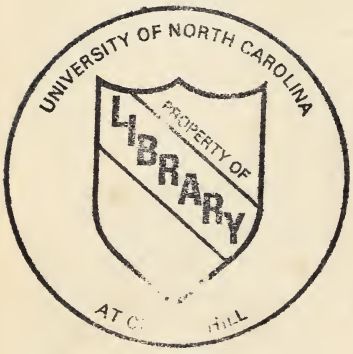
LONDON:

LONGMAN, BROWN, GREEN, & LONGMANS

PATERNOSTER-ROW.

HODGES AND SMITH, DUBLIN.

1848.



LONDON:
SPOTTISWOODE and SHAW,
New-street-Square.

THE FOLLOWING PAGES ARE DEDICATED

TO THOSE

FRIENDS OF IRELAND,

WHO, during the late National Calamity, so nobly aided by their contributions their suffering fellow creatures; with a view to show, that were its powers *permitted* to develope themselves, THE COUNTRY WITHIN ITSELF CONTAINS AMPLE RESOURCES, without again inflicting so severe a tax upon the benevolence of the people of England; and with the ardent hope that this little volume may so far aid in enlisting their sympathies, as to lead to the formation of a new Era — the tranquillity and ultimate regeneration of Ireland.

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INTRODUCTION.

THE present unhappy state of Ireland is a subject engrossing such universal attention, that there needs no apology for bringing forward any practical suggestions for alleviating the sufferings of that unfortunate and misguided country. I should probably, however, have refrained from adding to the number of publications, valuable or otherwise, already issued upon the subject, had I not, during the last twelve months, been in a position affording peculiar facilities for investigating the cause and root of the existing evils, and of ascertaining, from personal intercourse and apart from all prejudice, the real grievances of all classes.

A civil engineer, moreover, as dealing largely in human labour, as the groundwork of material productions in almost every variety, and in the numberless combinations of engineering science, connected with the employment of the people and with the improvement of the mechanical

part of husbandry, ought to be able to form the best judgment as to whether the deficiency of results is owing to a misapplication of such labour, or a fault in the prime mover itself. This I have had ample opportunity of doing, having had the sole management of a tract of country containing from twelve to fifteen thousand labourers, employed on that most irksome and unsatisfactory of all tests, — a new occupation conducted upon new principles.

The evils of the present working system in Ireland have been ably and fully demonstrated by writers with whom I do not for a moment venture to compete; yet it is almost impossible for those who have not visited the country, and been engaged in extended occupations, exciting the interest of all, to form a correct idea of the actual position and sentiments of opposite classes, owing to that power of misleading, so essentially Irish, and likewise to the violence of party feeling, which, deceiving the well-intentioned, causes facts to be distorted, and theories to be built up, to suit individual views and interests.

My endeavour, therefore, has been to supply this information; to present the unbiassed

views of an impartial spectator; describing the country and inhabitants as I found them,—"in nothing exaggerating, and setting nought down in malice." The facts here related will speak for themselves; and being in no way coloured, the reader will be enabled to draw his own inferences. I have circumstantially detailed things as they are, in order to illustrate the characteristics of the people, in a part of Ireland sufficiently populous to be formidable, and yet sufficiently isolated to retain, to the fullest extent, all the national peculiarities. I here take no merit for this impartiality, being by birth an Irishman, and in parentage and descent English; thus connected by ties with both, and forming a type of that real union, which, I hope and believe, we are on the eve of establishing between the two nations.

My first introduction in Ireland arose from my having been referred to the Irish Government on some business, which is detailed in the course of the following pages. In result, I undertook the engineering conduct of a tract of country embraced by the towns of Athlone, Roscommon, and Ballinasloe, and including

a great number of men, and several engineers, with a double motive: firstly, to give my share of labour in aid of the people, during a period of such frightful calamity, when every engineer connected with the country, who could not afford a proxy, should have gone himself in aid of so Christian a work — a crusade, in fact, against famine; and, secondly, not having spent any time in Ireland for sixteen years, to discover how it was, that a country with such vast resources, and adjoining so great a nation as England, was, nevertheless, always steeped in poverty, her lands untilled, and her sons generally enduring the extreme of privation.

I finally left England on the 31st of October, 1846, and, after exactly twelve months most chequered existence, returned to London on the 1st of November, 1847, with the intention of prosecuting plans, some of which I had been several years in maturing, and upon which I had the honour of an audience with his Excellency the Lord Lieutenant a few days previous to my departure. A portion of these are here submitted.

With respect to those more immediately

connected with my own profession, I wish to express the strongest conviction of their practicability; a certainty as great as any man can be expected to entertain of a subject yet in theory, — a matter not demonstrably evident.

In this, it is gratifying to me to say, I am supported by some of the first authorities of the day. Their value must, however, be tested by public opinion.

I have therefore felt it a moral obligation in the present critical state of Ireland, when the balance upheld must shortly descend, for good or for evil, upon the country, and every *Irishman*, nay, every philanthropist, should *add his share, however small, to the vast amount of talent already concentrated in her behalf*, to bring prominently forward the gleanings of my experience in the country; together with their results, or the deductions which I have made, as to the nature of the remedies required, both for her immediate relief and gradual regeneration.

Ireland has long been a paradox in the social state of Europe, and, like most paradoxes, difficult in the solution. In order ultimately

to advance, she must first retrace her steps. At the present moment she is in a condition probably more deplorable than that of any other nation upon earth: the most infant colony is better circumstanced, as there, at least, there is no war of class. Whatever our opinions or politics may be, all will agree, that in her present state, and with her vast and undeveloped resources, agricultural, maritime, and manufacturing, Ireland is not one quarter as valuable, either to herself or to her immediate neighbour, England, as she might and ought to be from her natural superiority. Such being admittedly the fact, there must be grievous fault on one or both sides. The country, which ought to be teeming with abundance, — happy, bright, and prosperous,— is a perfect chaos; the lives of the higher classes taken by assassination, while those of the lower are destroyed by famine and pestilence.

The remedies proposed may be divided as follows: — the justice which is about to be done, and is much needed for the poor people; and the injustice we speak of inflicting upon the landlords. The present position of this latter body is certainly most unenviable. A system

of tyranny and intolerance has been permitted, nay, even encouraged, for centuries; and now, when a better state of things is just beginning to dawn, one particular period of unparalleled trouble and misfortune is proposed for the adoption of a sudden and compulsory reform. Instead of gradual and considerate measures for the removal of evils which have been suffered thus to accumulate, the landlord is to account in one year for the preceding fifty of mismanagement, — the errors chiefly of his predecessors. I do not wish to defend the landlords — far from it. I fully concur in the testimony of all who have written upon the subject, respecting the unfortunate want of energy, industry, and enterprise by which the majority are characterised; but at the same time it is hardly fair that they should be made the first and only victims to the tardily imbibed justice of a new system of policy.

The remuneration for losses in the abolition of that most iniquitous system, the slave trade, cost the country thirty millions sterling. Every one engaged in that traffic must have known that he was employed in an unjust and unchristian occupation; whereas, in the present

case, it is at most an error in judgment on the part of the landlords, that the people are not made to the fullest extent partakers with them in the utmost production of which the soil is susceptible. It must not be inferred that I recommend any grant to Ireland, further than a grant of one month's reflection, and twelve months of subsequent and effective co-operation, to the country, the landlords, and the people, alike, on the part of the Government.

It cannot be denied that there are great grievances on both sides: — the following will give some idea of the difficulties of each party, as I have heard them described.

Friend of the Landlord. — They should give up peaceable possession, or pay the rents. Why do you not distrain? Why suffer men to remain upon your lands who will neither pay for nor improve them? Would you not be as good an owner of the soil as the tenant who usurps it, eating the oyster and leaving you to pick up the shell?—which is, in fact, verified by your paying taxes for that from which you receive no rent.

Friend of the Tenant. — Are then the wants

of the many, in a matter of life and death, to be considered subservient to those of the few? Are the industrious sons of the soil to be forced to give up, at the caprice of a single individual, those lands in which they have a rightful share, and which they have held from generation to generation? Is the poor man to be thus expelled, at the risk of perishing for want of employment, or being driven to acts of desperation which must eventually end in universal warfare? The greatest and most protracted miseries that human beings ever endured are inflicted upon them and their families,—and for what? To suit the exigencies of a heartless and unrelenting landlord — a fortunate speculator of yesterday — to whom the lives of his fellow creatures are of less consideration than the gratification of his own improvident caprices.

Landlord. — Have I not a right, with my own property, to choose how much to cultivate, and how many to employ upon it? I am only letting my lands at what others are getting elsewhere; but the people here are for the most part indolent, self-opinionated, and revengeful; they will neither pay their rents, nor

part with an inch of ground. According to the late law, we cannot touch a standing crop, either before six in the morning, after nightfall, or on a Sunday, so that the people come in a body, at night, or on a Sunday after mass, and clear off everything to other lands, where we have no power over them. As to distraining, it is next to a suicide to attempt such a thing.

Tenant.—Suppose yourselves in my position. I pay the utmost value for the land,—a value so high that it is only in years of extreme plenty that my family and myself can subsist without hunger, even on the potato. God made the earth for all mankind; but we are denied a share at the very time when we most require it. We are ready either to till the lands as tenants, or do a day's work for a day's subsistence; but we cannot suffer our families to die of starvation, whilst the earth remains to be tilled.

Such is the present discordant state of Ireland, and such it will probably continue until the Government adopt some test to prove which party is in the right. It is undeniable that the landlords, by suffering themselves to ad-

vance with the progress of science, might not only double and treble their rentals, but likewise, by giving the labourer a fair share in the profits of high farming, unite more closely to them the people, who at present look upon all innovations as a plausible precursor to further impoverishment. On the other hand, the *prime mover*, although certainly not now in working order, would soon become so from the prospect and realisation of an improved state of things. As imported into this country, there is no better motive power than the Irishman; and no people are so quick at putting a suggestion into practice, when they do not see it opposed to their own interests. In the late Public Works, breaking stones on the highway, wheeling barrow-loads, using the pick-axe, crow-bar, and sledge-hammer, and other such operations of manual labour, were entirely new to them as an agricultural population; and yet they at once fell into the system. For my part, I do not hesitate to say that I would as soon employ a body of Irish labourers in any description of work, as any other men; and I know some in the profession who say they would very much rather have them.

However, the plan of Model Farms, suggested (page 128.), would at once decide the real merits of the Irish peasant: having no right in the land, they now look upon improvements as advantages entailing increased expenses, the profits from which may at any moment be torn from them; and prefer hoarding, by stealth, to expending their surplus means on extended operations. This want of confidence is mutual; each party sees in the extirpation of the other the shortest mode of securing its own peace and prosperity.

Indeed, I firmly believe, at this moment, that but for *respect to England*, the obnoxious portion of the landholders would be this year utterly exterminated. The people have an idea that it must be so, to prevent their own and their families' destruction. I maintain, there is that respect for the English, as a nation, even with the most violent of Ireland's partisans; they think and hope, as it has been promised, that she will be rescued from herself: at which time a victory will be achieved,—the greatest of Great Britain's conquests.

In the hope of contributing to this object, the following pages are brought forward; not

in the form of a literary production, but simply as a plain narrative of facts and details not hitherto published, and an exposition of the practical suggestions of a professional man. They will therefore, I trust, be judged chiefly by the merits of the plans advanced.

My sole object in submitting them to the ordeal of public opinion will be attained, should they conduce in any way to the promotion of that much-to-be-desired result — the establishment of peace and prosperity in Ireland.

*** Since the following treatise was committed to press, so much of a similar character has, at different intervals, appeared in the *Times* and other leading journals, *on the social condition of Ireland,* that I have preferred omitting much valuable matter bearing upon that subject, to incurring even an appearance of plagiarism. The coincidence with the Frontispiece is, however, so striking, even to the figure offering the rent on his knees, that I cannot avoid inserting it. The letter is from the *Times* of December 11th, at which time the Frontispiece was already engraved.

It describes the police "surrounding the

poor man's cabin, setting fire to the roof, while the half-starved, half-naked children were hastening away from the flames with yells of despair; while the mother lay prostrate on the threshold writhing in agony, and the heart-broken father remained supplicating on his knees."

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A

TWELVE MONTHS' RESIDENCE

IN

IRELAND.

PART I.

PHYSICAL ASPECT OF THE COUNTRY.

CHAPTER I.

APPROACH TO IRELAND.—CONTRAST WITH ENGLAND. — BAY OF DUBLIN — COMPARED WITH NAPLES. — LIFFEY. — CITY. — PRINCIPAL BUILDINGS. — SUMMARY AND COMPARISON.

On first approaching the shores of Ireland, *en route* from London *via* Liverpool to Dublin, we are struck by the contrast they present to the busy commerce of those two great emporiums of a trade spanning the entire surface of the globe, possessing relations with every

locality where the name of a ship is known. I will endeavour, as far as my limits will admit, to show how little art has effected, and how much nature has done for the country.

Some parts of Ireland are favoured to an extraordinary degree, both in grandeur and sublimity of scenery and fertility, even to luxuriance. The barrenness and sterility discovered at intervals will admit of ages of employment before the resources of those localities are fully developed, or there exists any necessity for the people's emigration; to effect in other countries without population the same improvements here required, to precisely the same extent with an immense population in the kingdom itself, and in all surrounding nations.

On arriving in the Bay of Dublin, at about five o'clock on a fine autumnal morning, what a beautiful and yet delusive picture of the bright side of Ireland is presented! The shores in front studded with villas and mansions in one line, miles in extent, and covered with a forest of noble trees and truly emerald verdure; the life-giving sun has arisen behind in the east, and the whole of nature is ex-

hibited in one flood of golden light, with its varied plains of undulating lowlands and swelling eminences,—even some of the most distant of the Dublin mountains, forming the purple amphitheatre of background, may be observed in all their details; the cottages, their boundaries, and the crops or products of the soil. On the left is Bray Head, rising abruptly many hundreds of feet from the sea to its summit, and yet clothed with herbage, except where the yellow quartz shows the surface to be so precipitous that a stone or a plumb-line dropped would fall direct to the sea, which is breaking with subdued violence beneath.* Opposite, and about ten or twelve miles separate, spreads the sweeping hill of Howth, of an equal eminence with Bray Head, like the two watch-towers of Ireland. The former, however, by its sear-brown scalp shows the absence of vegetation over a great extent of its surface; the extended field of a telescope still further developes that it is covered with heath and loose stones; and yet, by its gradual slopes and the encroachment of verdure around the cottages, it is obvious that all under a proper system

* See page 162.

might be profitably improved. These vast hills and mountain-ranges enclose the alternate champaign and undulating country surrounding Dublin; through the centre glides the meandering Liffey, which, after winding and displaying itself and its shelving banks in a thousand varieties of form, and combinations of curves with a richness of soil and exuberance of production equal to that of the upper Thames, here empties itself into the Bay of Dublin; and certainly, to the admirer of art, not less beautiful is its course through this noble city, with its splendid quays, streets, and public buildings, in which Dublin is excelled by no other capital in Europe.

This bay has been compared, in its natural beauty, to that of Naples; which, though wanting an Italian sky and atmosphere, it far exceeds in point of sublimity and grandeur.

Proceeding to the suburbs of the city, the river sweeps around the beautiful and varied Phœnix Park, with its sloping banks and sweeping valleys, overgrown at intervals by a giant description of the red and white thorn of extreme age; the still more giant timber marking the course of the broad avenues which

sweep across its vast extent; and, towering above all, that immense piece of masonry, the Wellington Testimonial. Every thing appears to be on the same scale of grandeur and profuse liberality. Proceeding forward, we come to a light and beautiful engineering work, the King's Bridge, built in commemoration of King George IV.'s visit to Dublin; on the left, and nearly opposite to this structure, are the park gates; and the royal barracks, — a most extensive, well-proportioned, and handsome structure of its kind. On the enclosed green, between the river and the barracks, was erected the first model soup-kitchen of Mr. Soyer, whose efforts, however well meant and philanthropic, and that I believe is beyond dispute, were nevertheless far from efficacious. Any system which keeps a nation in idleness cannot but be vicious; and it is to be hoped that the people will be required to work for their landlords in return for food, for which the soil in the end will have to pay; they cannot always eat of the bread of idleness.

On the right of the King's Bridge stands the Kilmainham Royal Hospital, and the new terminus of the Great Southern and Western

Railway, which promises to be a very noble pile, in the Romanesque style of architecture.

At this bridge commence the quays, which run in an uninterrupted line of wall and streets to the extent of nearly eight miles, taking both sides of the river. The quays themselves are of spacious dimensions; and the narrow river being fenced off by parapet walls, the continuous line of houses on either side gives the appearance of some immense street, with here and there a slightly serpentine course. Lower down, and on the left, are the Four Courts, a magnificent building more resembling some vast ancient temple than the description of edifice which in the present day we find commonly constructed.

On the right again is the venerable Christ Church Cathedral, in which still exists a monument of Strongbow.* Likewise St. Pa-

* About twenty years ago, a most dreadful accident was said to have occurred in the vaults under this church, which were infested with rats. An officer was attending a funeral in the vaults, and after the ceremony he continued to stroll about musing, — so it is supposed; the party left without him. He was not then missed, the entrance was closed, and all his efforts to be heard, or obtain egress, through the strongly-barred doors, were unavailing. In the morning search was made by his

trick's Cathedral, nearly in the same direction, in which are monuments to the memory of Dean Swift, and Mrs. Johnson, the celebrated Stella. Carlisle Bridge is the next important point; it is the main and rather narrow conductor to the seven leading thoroughfares of the city, and at present the most dangerous site in Dublin. In fact, I should say, the whole ought to be pulled down level with the quays, and covered over with iron girders, in a line with the streets, all the girders springing from the present abutments as a common centre: this should be continued for the entire breadth of Sackville Street; and the present balustrade with ornamental cantilevers placed outside as a parapet.

The entire river would pay for arching at a point like that, so valuable as building ground. This will, perhaps, create a smile; but even in the bridges of former days they made their nar-

alarmed friends, and, dreadful to relate, his clothes and skeleton were alone found. He had evidently been attacked alive by the rats, unused to have their haunts invaded singly; and his hacked sword and the numbers of rats destroyed around showed too plainly that he felt all the horrors of his situation, and the nature of the encounter in which he was unsuccessfully engaged.

row space still more limited by the erection of houses upon them; which, if of sufficient width, might have been made a decided ornament, instead of an obstacle and an eyesore. This, the last of seven bridges within the suburbs, has at every point considerable interest; on the left is Sackville Street; great breadth and good shops on either side give a noble effect; in the centre is a large Grecian Doric pillar, in memory of the great Nelson, on the top of which is a statue of the hero; some idea of its proportions may be estimated from the circumstance that at the funeral of the illustrious O'Connell, I myself observed a man standing upon the head of the statue, and from his proportional appearance, three or four others might at the same time have found a footing. Opposite to this fine column may be seen the Post-office, a chaste and elegant structure; on the other side of the bridge, at a short distance, Trinity College entrance; likewise a part of the Bank of Ireland, formerly the Irish Houses of Parliament, and certainly as handsome a building, with as fine proportions, as exists in any country; at once bold, chaste, and magnificent. On the quays below the bridge, at

the one side may be seen the Corn Market and Conciliation Hall, and on the other the Custom House, another noble and well-proportioned structure of large dimensions; it contains the offices of the Board of Works; to the left and right are the shipping and two Docks, a short distance below which the Liffey finally empties itself into the Bay of Dublin, its course yet marked by two light-houses and a great extent of pier or mole, the entrance to the river strongly fortified by powerful batteries.

Such is the metropolis of Ireland, and such its enchanting suburbs; a faint sketch of which I have endeavoured to give; but I fear, when placed in juxtaposition with the interior aspect of the country, the contrast will be harsh, although, I trust, not uninteresting to the philanthropist. I have herein endeavoured to show, from what has been done, what may be done; from a picture of what the people are in some places, what they ought to be everywhere. When they have lands at fair prices, they are too often wrested from them; and when they are fixed at too high a rent they cannot pay for them; and so become a burden upon the state

or the really good landowner, who thus has a double tax to pay. From this it must not be supposed that I intend to espouse any party; far from it: but this I cannot be blind to, that there is a remunerative market price for produce; that in no country can it be grown cheaper than in Ireland; that the lands are untilled, or not tilled to their full extent; that the landowners are poor, and the people starving, in a fertile soil; and these things should not be: the nation is wasting and dying away: all men, of however limited capacity, should join in the effort for her salvation.

Passing westward from Dublin, the country gradually assumes the appearance of less careful tillage, and more frequent sterility; here and there has been lately developed some really fine sowing, quite in the English style; well clipped fences, parallel sowing straight fences, and broad trenches, or still more properly curving into Hogarth's line of beauty, and a careful neat style of husbandry which is at once a proof of a good agriculturist. There is no other work in a really English style until we arrive at Athlone.

CHAP. II.

ATHLONE. — THE SHANNON. — ACCIDENT. — GREAT CENTRAL OUTFALL. — IMPROVEMENTS. — SHANNON COMMISSIONERS. — LOUGH REE. — A BOAT EXCURSION. — A PICNIC. — BOARD ACCOUNTS. — STORM ON THE LOUGH. — PRINCIPLE OF WAVES.

THE "sweet town of Athlone," as Lover has pleased to consider it, is a wretched-looking, irregular, squalid, dirty place, with dingy shops, murky even by bright daylight, unlit at night, and having but one chief thoroughfare, forming the main road to Galway. The Shannon passes through the centre of the town; giving one half to Leinster and the other to Connaught, or *Ireland*, as it is termed *par excellence*, by the Connaught rangers and general inhabitants of the more pure Milesian province. The streets take all manner of dangerous rises and falls, twists, turns, and contortions, seemingly defying the scouring influence of the mighty river which rolls through, redoubling

its noise and efforts, without its cleansing effects being at all visible. And yet this same town, than which there is none more susceptible of improvement, is one of the largest military depôts in Ireland; possessing spacious barracks, fine level parade ground, extensive and powerful batteries, and out-work defences, with its old fort, that has done some good service in the time of Ireland's internal warfare, and now constitutes a protection and defence of the pass of the Shannon from an invading army, either by the bridge or the shallows at its base.*

The river rushes onward with a deafening roar; dashing impetuously down a rapid, but in no place precipitous descent, from the vast lake above to the almost level reach beneath. This shallow is very formidable during floods; it sweeps onward, carrying all before it, and is then dangerous even for boats to pass down. On one occasion a child was swept away by the torrent, and a man wading out to save it was likewise carried out into deep water. They were swept down in front of the quay, where a

* The state of Athlone is surprising, considering the character for spirit and enterprise of its hospitable inhabitants.

brother of mine, happening to be at the time, immediately jumped in and brought both to shore: a providential termination to a somewhat dangerous experiment, even for a good swimmer.

When we reflect that this mass of water, four or five hundred feet across, never flows, but is always sweeping down at the rate of from five to ten miles an hour, we may have some idea of its value as forming the great main outlet of the drainage of northern and central Ireland; and comprising a catchwater basin of millions of acres, all improvable, many in a state of most primeval solitude and sterility, and connected with minor rivers, brooks, and vast inland lakes and marshes, frequented and inhabited only by wild-fowl, geese, and even swans in great abundance; so much so as to cover vast tracks of reclaimable swamps by right of undisputed possession since the creation.

All this requires alteration and improvement. Whilst the government or companies are draining the larger lakes, the landlords, when or where they have the means, should tap the lesser ones. The very Shannon itself might, at this point, be cut to a level with

advantage, and thus bring under tillage and power of reclamation an amount of acreage that would pay for the labour threefold.

The first great work of a reproductive character, connected with Ireland, was the improvement of the Shannon; first, with respect to its navigation, and incidentally, the drainage of the river, its tributaries, and the surrounding districts, by the aid of locks, so as to render this noble river navigable for a distance of two hundred miles. Unfortunately the commissioners were limited in funds, or doubtless much greater improvements could have been carried out; yet, with the present prospects before the country, everything of a feasible character should be brought forward.

In some cases the Shannon has been deepened, and in others, locks have been placed, in order to save the expense of cutting away the shallows, and yet admit of navigation; as, for instance, at Athlone, where I doubt not a vast revenue would be derived by cutting away the shallows altogether. By that means the Lough Ree would be lowered, and an amount of land reclaimed that would pay for the construction, were it required, of an entirely new bed to the

river. There are thousands of acres of land within eight or ten feet from the surface; and some of the inner lakes and bights, having two and three feet of diluvial deposit, after being drained, would require little more outlay than the seed. The vast extent of level water would admit of a fall not too rapid for easy navigation, and I doubt not that these works would yet pay sufficiently well, by running a small embankment across where the water is shallow, and pumping out the water, as they do, on ten times the scale, in Lincolnshire and Holland.

These are most important considerations, and by any other nation would not have been suffered to pass in the first instance unconsidered. Unfortunately, in England generally, when a really liberal sum is expended, it is on works which all condemn, and in utter opposition to public opinion.

As it is, there are some very fine solid works here; the bridge, the locks, and the weir, do great credit to all parties, both in the skill of design, and care in execution; they are the only great improvements, west of Dublin, possessing a really English character of magnitude, usefulness, and finish.

The Shannon commissioners might, at the present time, much cleanse and improve the town, and in a manner which would almost come under the head of a reproductive work. For instance, instead of giving the sewers an outlet into all parts of the river where they have made steps for the convenience of persons requiring water, they might have carried them parallel to the river, and allowed them to run out below the rapids. They might also, by encroaching a little on the river, give handsome esplanades, which would, in parts, form valuable frontage for houses; and other new streets could be built, at little or no cost, up to the new quays or roads; as those possessing land in these suburbs would be glad to make the most of it by having it converted into important thoroughfares. This is due to the people of Athlone, as the Shannon Commissioners, in their improvements, were compelled to pull down a great many houses, of which there were before too few; and this deficiency has been lately increased by the two large fires which took place successively, and which, but for the Barrack fire-engines, and the proximity of the Shannon, would probably have removed Ath-

lone from the Connaught side of the river altogether.

The spreading of the Shannon at Lough Ree, above Athlone, is of considerable extent, being in length 20 miles, and in some places at least 14 miles broad. Its depth varies from what may be called shallow waters or banks, to an average of 200 or 300 feet. This scene is most interesting and attractive from many points, with its alternations of flat and unprofitable bog, reedy marshes, dark stone mansions, and sweeping lawns; rich and varied tints of crops and extensive pastures, or, very rarely, the busy husbandman with his harrow or plough, and the dark tilled earth in heavy, but nevertheless agreeable relief, both to the eye and the mind, from an otherwise wearisome monotony and want of life. In bright contrast are the brilliant waters tinted by the sparkling rays of the sun, and seeming literally alive with flights of wild-fowl, eddying or circling in lines above, or skimming fearlessly upon the glossy surface. This beautiful lake is embosomed in softly undulating boundaries, and studded with islands which agreeably diversify the blue and tranquil surface. Not always, however, so tranquil are

its treacherous waters; like the soil around it, it has its unpropitious seasons, of which I will endeavour to show an instance.

The first opportunity I had of visiting this spot, was after my connection with the public works had ceased. I much regretted leaving, and but for the circumstance of some imperative engagements recalling me to London, my intended sojourn of two or three months, which I originally named to the Commissioners, would probably have been prolonged even beyond what it eventually was, amongst a people whom I saw no reason to fear, even when using necessary severity; but on the contrary, every reason to admire, from their strongly affectionate dispositions and resignation in deep suffering: they treated it as the will of God, and murmured, "Thy will be done."

In company with some other gentlemen I had taken a boat and proceeded for two miles up the river, as far as the entrance to the lake. As we advanced the weather became more and more rough, until, on rounding a point which brought us unavoidably into the direct and unimpeded sweep of the water, we found, to our surprise, that a heavy swell had arisen; so

much so, that some of the party wished to return, without encountering what to them appeared a tempest: but within half-a-mile of our destination, Carey or Dillon's Island, we had no idea of such a step. I had the tiller, and all the management required was to keep the little craft fair head to wind; had she been permitted to turn side on, we should have been keel uppermost without much effort; so onwards we went, with the slow and steady stroke of four oarsmen: all amateurs, by the way, and, as generally happens, with very varied ideas and amounts of experience in such matters. I well knew that once under the lee of the island we should have comparatively smooth water; and this we perceived we were momentarily approaching as it waned out from the combined shadows of evening and the gathering storm. The wind was blowing about north north-east, and the island unfortunately lay a couple of points more east: so that we were in the difficulty of a ship in a gale trying to make some desired haven; and in the meanwhile receiving the full shock of the sea on her quarters; with this difference, however, that we, having no pilot-coats or dreadnoughts, were

getting the light skimming spray from the waves, or from the unpractised oar of some less skilful of our party; and every wave, if not perfectly unbroken, threatened to swamp us altogether. Having now to turn still more east towards the island, and not right in the wind's eye, increased the difficulty. We at last made the land, and running our boat under a little stone projection, answering the purposes of pier and breakwater, we proceeded direct to the house of the worthy proprietor, Mr. Dillon, a friend of some of the party, and whom we found just adjourning to bed. This, however, with a bachelor and an Irishman, was but a trifling obstacle to our reception, and he welcomed us with much cordiality, merely expressing his surprise at our having ventured out on such a rough night.

The private conversation which then took place between himself and my fellow voyagers I was not permitted to join; but I afterwards found it related to a proposed dinner on the island on some subsequent day; and it was not until my health was on that day proposed, with the invariable accessories of speeches and tumult, some real sincerity, but, of course, some

wine-inspired enthusiasm, that I discovered the dinner to be given by my brother officers and other friends, entirely as a parting compliment in my honour.

We may as well finish the dinner now, being on the spot. It was not to be compared to a city feast, either in the splendour of its appointments or the famed cooking of Birch or Lovegrove; but, taking the number of people and the quantity consumed, I think, in point of gastronomic power displayed, it might vie with any since the days of Whittington, even during the celebrated cuisine administration of the most liberal and hospitable Alderman J. Johnson. Those who go to Lord Mayors' dinners have not generally the advantage of a four miles pull up the river, and against the current, as we had. Eels a yard and a half long, as thick as a man's arm, captured in the water at our feet, and mutton from the meadows skirting the Shannon, were the chief dishes of the island; but there was abundance of everything good and homely, except potatoes, for which the substitute here, as well as generally throughout the country, was boiled turnips. Two years previous, they would as soon have

thought of the Shannon itself running away, as the potatoes failing. It happened to be Friday; a serious matter to good Catholics, to whom the rich eels and poor soles could not make amends for the absence of the favourite vegetable. Even Father Mathew's influence had crept in amongst a few, who, I suppose, contented themselves with thinking what a good dinner they might have had, if it were not Friday. Others, not so circumstanced, wished "long life to the Council of Trent, that did not at the same time with the meat, forbid the whiskey," which appeared to make up for all deficiencies.

After dinner we proceeded to the lawn to dessert, *i. e.* whiskey punch, with here and there a solitary and despised bottle of wine. In due form the Board of Works was proposed and acknowledged—as a body springing from the Shannon Commissioners; a considerable extent of the site of whose labours, was then echoing back their praises on former and present laborious exertion. Many a joke passed as to the minute particularity of the Board's proceedings; the rejection of some accounts, and saddling the parties themselves with others.

A certain well-meaning but over-zealous chief officer was the cause of some merriment, on account of his confusion of papers and manifold difficulties : in an instance especially, where he had lost all traces of the money sent for expenditure on the Public Works. I came in for my share, having had a bill in due form returned to my office "for explanation," to the amount of about 3*s.* 6*d.* for mending a driving whip, a set of shoe brushes, and a bull's eye for a carriage lamp ; absurdly debited by the tradesman to the Board of Works, instead of to my private account, and forwarded for payment from the Consolidated Fund.

At the same time the opposite principle of delaying, cutting down, or declining fair payment of honest and respectable tradesmen, was discussed, and somewhat more difficult of defence. Some young men were over head and ears in debt, some processed, some forced to have recourse to raffle their horses, and other such expedients, to raise the wind, owing to the delay in the receipt of their salaries, ostensibly from some vaguely hinted informality ; but just as probably from some of the manifold mistakes of the Accountants, or from a rumoured

absence of the needful funds in the British Exchequer.

The day passed very cordially. It was gratifying to me to perceive that those whom I feared I might possibly have treated with too much severity, from a necessity of complying with the Government and the Commissioners' regulations, appeared to have entirely forgotten all feelings of an unpleasant nature, if any such existed: there was no occasion for dissembling, as I was no longer connected with them, and many after that day I never saw again. The remaining hours were spent in boating, shooting, and fishing, with music, upon the lake. The first flute was probably not equal to Weiss or Richardson, nor was the cornopea possibly as clear or brilliant in staccato passages as that of Kœnig; but, on the whole, I have heard worse performances; and the open expanse, the still waters, and echoing shores, did more for the harmony and effect than Drury Lane with its many protuberances, angles, and draperies; all of which might have been ingeniously contrived, as far as possible, to deaden sound, and stay the reacting vibrations.

I had almost forgotten our rowing party left

on Dillon's Island, gravely debating whether they should take up their beds there instead of venturing to return, at the probable risk of obtaining them in the more extended accommodation of the Shannon. This question was speedily settled by some of the gentlemen declaring, that as they had peremptory engagements in the morning they must take the boat, and leave the others to remain or swim ashore the next day, if they preferred it. Our misgivings were by no means removed by Mr. Dillon's advising us not to run direct for the point, but to hug the south-eastern shores of the lake; saying if we managed that, we should soon run home with the wind.

This was a great mistake; as we found out on getting from under shelter of the island. Our informant had either forgotten or not reflected upon the direction of the wind, and consequent line of the waves, nearly due north and south; and had thereby placed us in a much more critical position than on our coming up; besides that we had not the boat so much under our command. At this juncture the bow oarsman missed his stroke, the wave in which he meant to dip his oar having eluded his effort, and

the consequence was, that he immediately became heels upwards in the head of the boat. The unbalanced stroke of the opposite oarsman speedily brought the boat round to the full shock of the surf, which was here breaking upon the shore with alarming violence, and of which the gentleman in the bottom, the cause of the mishap, got the full benefit,—not but that we all had a tolerable share of the same, —the boat at the time rocking, pitching, and labouring so violently as to drive the water frequently over the person entangled in the bottom: one wave thus swept us within a few oars' length of the shore. Fortunately, in the trough of the sea we skimmed a sunken rock, which at once brought her round again; We had had enough of "hugging the shore," and as her bottom was not stove in, by a quarter of an hour's vigorous pulling we managed to get her into the middle of the lake. Escaping at last the bite of the land, we were enabled to avail ourselves of the power of the storm, which, together with strenuous and united plying of the oars, kept us at the same time in advance of the waves, and sufficiently warm in our wet clothes. And this

tempest in miniature gave us a perfect idea of what we might have expected, if with so strong a north-westerly wind we had, like the western fishermen, been without a leeward shelter within some reasonable distance; and yet I have seen a less depth of wave on the Atlantic itself, in rough weather, than we here experienced.

It is said that a wave takes two or three miles of water to generate; but I am of opinion that many times that distance is required to give its maximum of violence and momentum, and likewise a depth of from 15 to 20 feet: when it draws near to shallow water, its velocity is impeded; it gradually curls over and breaks. There are different theories on the formation of a wave. The Encyclopedia Metropolitana, in an article on the subject of Waves, states, that they are of a vermicular action, rolling round the particles of water, which accumulate, like a snow-ball, in its rotatory progress.

This, I think, many will dispute, as, if such were its motion, all matters collected upon it would be engulphed, and whirled round with the water: such, however, is not the effect, as even the lightest substances, such as sea-weed,

pieces of wood, or cork, will ride upon the surface, except in coming in shore, when the onward progress is retarded by the bottom; it then acquires a kind of revolving motion, by the force of which every thing sufficiently small, even stones, in rough weather, will be carried round. I certainly consider that water has a vermicular action; that the whole surface moves forward as a current; and the waves gradually increase from the first ripple, passing onwards with an accumulating power and still greater momentum than the intermediate waters or current, in the same manner as a loose mainsail undulates in the wind without a particle of rotatory motion: it is, in fact, the pressure of the wind from which the water undulates, but does not advance.

CHAP. III.

THE BOGS AND THEIR MARL HILLS, GEOLOGICALLY AND AGRICULTURALLY. — TRAM-WAYS. — DRAINAGE WITH ENGINES, AS IN HOLLAND AND LINCOLNSHIRE. — TURF AND COAL. — THEORIES OF BOG FORMATION. — FALSE SYSTEM. — RECLAMATION. — PEAT CHARCOAL.

THE country frequently presents an extraordinary appearance to the stranger — extensive tracts of low and upland morasses, uncultivated and uninhabited, skirted by the most fertile parks and uplands, which have obviously at one period presented the same features of desolation and sterility; in some parts, extensive districts of undulating or hilly commons similar to the downs and wolds of England.

The wilds of Connaught west of the Shannon and bordering upon Tipperary contain, as well as most other parts of Ireland, vast tracts of bog, that for many miles may be traversed without meeting with trees, houses, gardens, or any vegetation other than the brown bog heath, which is so soft that horses

or cattle cannot browse upon it, except during the hotter months of summer. Some of the softer tracts are dangerous to traverse on foot in winter, as, by missing the small tufts or *scraws*, as they are termed, the passenger would probably descend at once to the waist in the bog, and have to use considerable expedition to avoid going over head.

Here and there, at intervals, throughout the morass, is found gravel or marl in hills, or sometimes in beds under the surface, in ridges or chains, similar to those of the finer sand mounds formed by the sea on some parts of the coast; and doubtless these gravel or marl hills have been formed in the same manner, by the operation of floods, carrying in suspension, and at length lodging, the lighter particles of matter on the sides of the channels or lakes of that period. It is wonderful here to recognise the all-wise dispensations of the Creator. These hills contain in themselves the best of all modes for reclaiming the very bog in the centre of which they are frequently located; by having an inclined plane running down the sides with an endless chain, empty waggons would be drawn up by the descent of those coming laden

from the top, through the force of gravity alone. These waggons might run miles across the bog, and thus five-sixths of the cost, viz., that of carriage, might be saved. It is to me matter of some surprise why this plan is not adopted by some of the large agriculturists, as there can be no tangible objection against its feasibility.

These hills are generally composed of limestone, gravel, sand, clay, marl, or a combination of such materials; they are the best of all substances for manuring peat, and even in one year will give some return for the expenditure. In a few years, by good farming, the outlay will be more than repaid.

It has generally been objected, that cropping would do away with the turf, and, vice versâ, turf-cutting would destroy the reclaimed and reclaimable land. In the first place, cultivated land is more productive than bog turf. Bog land costs about 2*s.* or 3*s.* per acre per annum; good tilled or grazing land, such as I have seen reclaimed, nearer to 2*l.* or 3*l.* per acre. The first thing necessary is, to level the turf; and even were all in time cut away beneath, what would be the difference

between these lands and those of Holland, where hundreds and thousands of acres are lower than the bed of the sea? — the water could, as a matter of course, be pumped out by windmills or steam engines. But the day is now near at hand when coal may be purchased at 12*s.* to 15*s.* per ton as a maximum in the interior of Ireland. In England they can afford to carry it for under 1*d.* per ton per mile. This will put turf out of the market. Coal at 15*s.* per ton is already nearly if not quite as cheap as turf.

On the subject of the formation of Bogs there are many speculative theories. Some say they are the decomposition of a succession of antediluvian forests, and bring forward as a proof the fact of different strata of the largest sized forest trees having been found one immediately over the other, upright, and with perfect roots, but apparently broken by floods at a short distance above the roots. The objection to this view is, that bogs appear to preserve timber, which, in many cases, is discovered as strong as ever, especially yew, and oak. We are, moreover, at a loss to account for the absence of the various stages of decomposition which

should have been found going on amongst the trees of which the bog is said to be composed.

Others, again, imagine them to be an accumulation of weeds and forest timber carried away and deposited by floods, or an ebbing tide, and that the larger trees have formed a dam or pen for the waters which gradually filtered through, whilst the fibrous matters were retained. This has much the same objections as the first supposition: in part, both may be true, but they certainly do not account for the peculiar and uniform formation of the mass of matter of which a bog is composed. That water has flowed in these high situations is proved by the original lodgment of detritus on which the impressions of fern plants, marine shells, fish, and even the feet of aquatic birds, have been discovered. These, in time, became hardened: numerous specimens may be seen in our museums.

Without attempting to follow out every ingenious theory, I will content myself with that which appears to me, and can be proved to be in some degree, the correct one. At any rate, it will hold good in every instance;

whereas it would be difficult to show how bogs were created on the tops of mountains by the other process, or, in other words, how the debris were carried from the lower and lodged on the higher levels.

In all flat, watery, or damp situations, where fresh water is suffered to remain, exude, or decompose, fibrous matter takes root, as exemplified in the duck-weed of a stagnant and shallow pool. In extensive, low, flat, or exposed surfaces, this effect has taken place on a large scale — a long, fibrous weed has taken root, gradually decaying, and in time making way for renewed vegetation. As this operation continues, the body of the bog rises, being fed or nourished with water by capillary attraction; and this has been compressed by the gradually increasing mass above. It is likely enough that at different periods ranges of forest trees have grown and the tops been torn asunder by the bursting upon them of a body of water: after the lapse of time another stratum of peat has been formed, and an alternate succession of trees have existed and been carried away, the consolidation of the turf arising from the joint action of moisture, time, and pressure.

The greatest depth to which bogs are known to grow is between 30 and 40 feet, and it appears to me that this is the extent of capillary attraction with these substances. Although evaporation and consequent growth goes on to a greater height with some trees, still they have the advantage of their broad leaves and branches exposed to the evaporating powers of the sun and air; whereas, in the other case, the mere top of the fibrous matter is exposed, and at that height, the attraction of gravitation overcomes the capillary attraction. On the margins of bogs, more especially, are frequently dug up bog fir, oak, yew, and other timber, lying in a nearly horizontal position, as though growing or drifted on to those situations, which is probably generally the fact: their not being so often found in the centre of bogs may be accounted for by the want of proper soil for their growth in those places.

The turf is, in a great degree, impervious to moisture; it therefore effectually drains land, and, mixed with clay, forms an excellent puddle for banking up water and other similar purposes. The spongy bog is not used; it being in a state of transition, turf is not yet formed.

It acquires different degrees of consolidation according to the depth or pressure to which it is exposed; the upper turf burns too quickly, the middle stratum assumes a proper consistence, whilst the lower is heavier and burns like a dull coal. We frequently find black turf on the surface, and this is probably owing to some former local pressure above, such as a body of water might be supposed to effect. Some very interesting matter on these subjects will be found in the "Reports of the Bog Commissioners."

In commencing the reclamation of bogs a very false system is at present generally pursued in Ireland. The surface is cut up and burned, and then usually subsoiled and manured for crops. By this mode the carbon is destroyed, the peat being generally burnt to an ash, and thus losing those nutritious and highly fertilising powers which charcoal is found to give. If a proper process of burning peat were adopted, mixed with clay, marl, or limestone gravel, the most perfect and productive earth would at once be created, and at a very moderate cost. For some very interesting details on the powers of charcoal, as a primary

source of vegetation, I refer to a pamphlet by Mr. Rogers, published by Effingham Wilson.

In one place he states, "The value of peat fuel for making iron has been long proved on the Continent, and England has been behindhand, because of her abundance of coal. Had she felt the slightest want of fuel for her furnaces, she would long since have sought that which the Irish bog can give her so abundantly.

"For the manufacture and forging of all descriptions of iron work, peat charcoal possesses singularly desirable qualities: the iron is improved by the action of the carbon, and its strength and malleability increased; while the caloric effect of the charcoal is considerably greater than any smith's coal; its cost, therefore, is not more in reality. In fact, inferior iron, forged by peat charcoal, is more capable of being worked into difficult forms than superior forged by coal, and is sounder and more fitted for resisting concussion; a circumstance invaluable at the present time, when the want of strength and soundness in iron work upon the railways may cause such fearful loss of life.

"For the smelting of all metals, also, the advantage of peat charcoal must be nearly equal;

for upon each the action of sulphur from the coal is injurious in a greater or lesser degree.

"But there is a further use for peat charcoal, which will not only make its demand certain and progressive, but will confer on the agricultural interests of England considerable benefit. It has been proved by unquestionable experiments, commenced some years since at Munich, that *carbon* or *charcoal*, applied as a manure or fertiliser, produced great advantage to vegetation; and by a succession of trials since, it has been incontestably established that peat charcoal is one of the most valuable general fertilisers now known—one that cannot produce injury by over use, while almost the smallest quantity will yield a certain amount of good. It is lasting in its effect, and *general* in its action, not being confined, like most other fertilisers, to an isolated capability. It supplies to the root, in ample abundance, that carbon of which most vegetables contain from forty to fifty per cent; and to obtain which they are now left dependent almost solely on the atmosphere."

I can follow him to the fullest extent as to the general value of peat, to employ the poor

in procuring it as an article of fuel, though I look upon this as very secondary to the improvement and tillage of land. We cannot export it as an article of fuel; it would be too light to pay for freight, and, as a matter of course, its consumption in this country is limited by the population: thus a very small proportion of the national labour could be expended upon it. On the other hand, by cutting the bogs to a level, reclaiming, and putting them under tillage, there would be a vast accession of labour; for each improvement, cent per cent of increased production and annual surplus exports. How is it that English grain is the finest in ear and in sample? Because the land is better drained, tilled, and manured. With proper management, Ireland's crops should be the finest, as they are the most abundant; and her agriculturists should rival in opulence the manufacturers of England. At any future time, when the vast and still unreclaimed turf fields became exhausted in any particular district, the bog land could be easily lowered and the earth respread upon them. Carbonised peat is of the highest value in the smelting of iron; when iron is charcoaled its value in-

finitely increases; and this is what renders the foreign Swedish iron so superior to our own. So much was this thought of, that it is said the manufacture of cutlery originally existed in the neighbourhood of Nottingham, and gradually proceeded northwards, *via* Mansfield, following the course of the forests, until it at last travelled to the site of the present town of Sheffield, where it became a fixed and staple trade; owing, so it is stated, to the destruction of the timber forests, so necessary to the formation of good cutlery by charcoal; but I should be rather inclined to think, to the vast cost of the timber thus consumed, and, likewise, the improved application of coal, which was gradually brought into its manufacture, and as about that neighbourhood the great central coal field terminated or branched off. In this belief I am strengthened from the existence of extensive woods beyond Sheffield; even to this day one exists nearly seven miles in length running north from that town. All this goes as proof of the great value of charcoal, and, consequently, of the Irish bogs, in the improved smelting and manufacture of iron, which is fully detailed in the above-mentioned treatise, "re-

specting the value of peat and peat charcoal as a fuel and fertiliser." Carbon, however, in itself is not a manure, but possesses the powers of absorbing gases to the fullest extent, particularly those necessary to the healthy development of plants, — assisting them, in fact, in the respiratory process, particularly in close, confined, or clayey soils.

I have dwelt at some length on this subject, as being the peculiar natural phenomena in Ireland, and the features most requiring agricultural development: I am of opinion that they are susceptible of the highest cultivation, and with the greatest advantage ; and that a fair trial of a large tract of bog, with all modern and scientific appliances, and proceeding upon a system of rigorous but not false economy, would establish the principle of bog culture.

PART II.

THE FAMINE AND THE PUBLIC WORKS.

CHAP. I.

THE FAMINE.—MINISTERS OF RELIGION.—ENGLAND'S SYMPATHY. — EXERTIONS OF GOVERNMENT AND THEIR OFFICERS. — A NATION STARVING.— TILLAGE NEGLECTED. — THE CONSEQUENCES. — REMEDY.

At that unhappy period in Ireland's history, when destitution, like a pall, spread over the entire length and breadth of the land, and the appearance, the silence, of those upon the public works bespoke their protracted and extreme sufferings,—a period when the smile of resignation was no longer to be seen, as in ordinary seasons, when the people had to undergo privations; during all this misery, the ministers of religion were forward in aiding to check the fearful calamity. With a spirit well becoming their holy vocation, did they labour in the universal cause of charity.

It would be invidious here to make comparisons, when all worked together, and animosities appeared to have been forgotten or conquered by all-absorbing pity and distress. Yet, from the superior influence of the Catholic clergymen over their flocks, their assistance was always more practically useful. They stemmed the tide of rising insubordination, and made examples of the ringleaders.* They were always, and at all times, seasonable and unseasonable, ready to meet and aid the officers of the government, in whatever might be sug gested to modify the evil, or simplify the operation of the system.

Without pursuing the subject too far, many were the pictures of sadness on following the destitute poor to their abodes of misery,—scenes too harrowing to be described, except in those journals whose province it is to lay bare the naked facts, however afflicting. These scenes were alike horrifying to humanity and to religion; it is now ascertained, that whilst millions of people were daily enduring the torments of hunger, the food was held over to realise prices infamously unjust and unreasonable.

* See page 86.

The sword of famine was unsheathed, and with keen and unrelenting power, descended upon all — the guilty and innocent alike. Its effects were visible in the emaciated forms of the strong man, as well as in that of youth; its influence was to be traced in the gaunt visage and the glazed eye of all, from extreme age, to that of once ruddy childhood, too often reduced to a second helpless infancy from want alone of sufficient nourishment.

Throughout the country there was a universal gloom. Hospitality was suspended or converted into charity; the very face of nature appeared to partake of the universal prostration and suffering. Cattle, pigs, poultry — nearly all were killed; and those few that remained plainly showed the absence of that degrading root which had been too long applied as food alike for man and brute.

The very birds of the air were starved, and the crows could scarcely be alarmed upon the road side, or the unfrequent corn-stack.

The people saw that England was aiding them to the utmost in their distress; that the private charity of this country, to an unbounded extent, was permitted to flow; that whatever

might be the errors of past legislation or existing laws, British feeling and generosity were utterly at variance with, and a contradiction to, such misrule and obsolete principles. The people saw this, and possibly reflected how the case would have been had they been left to their own resources, or to their own landlords; which doubtless would have happened, if this country were really possessed of the grasping qualities and spirit of extermination, unjustly ascribed to the entire nation, but in reality only the principles of a few fanatics.

Is there to be found a nation in the history of nations, that ever came so magnanimously forward in the cause of Christian charity, as, to her immortal honour, did this country? When, in future times, the Irish famine is spoken of, it will be identified with the millions applied to its relief; and that the entire nation was not saved, was owing to an error in principle in the offset, and not from want of liberality.

This sympathy for Ireland has been universal. Creeds, politics, and distinctions were forgotten in the general labour of benevolence. From the lowest rank employed, up to the highest officer of the state, has this fatigue been

borne. Men unaccustomed to labour, brought up in the lap of luxury and independence, were at their self-imposed tasks, working from early dawn to late at night, constantly engaged in disseminating and encouraging those feelings of philanthropy so peculiarly necessary at that period.

We professional men, and others, paid for it, and who undertook it as a matter of business, cannot claim the same merit, whatever our feelings or motives might have been; but for those, no part of whose duty it was, and with whom there was no necessity for the endurance of this fatigue, privation, and loss of health, their conduct on that occasion is to their lasting honour as philanthropists and christians. I have without hesitation described the errors and evils of the system adopted. I may therefore be permitted to state opposite truths; and to say, as knowing intimately the feelings of the Irish on this subject, that they cannot, nor ever will, forget the gratitude they owe this nation. Notwithstanding temporary ebullitions of national feeling, they admire England at heart, are always jealous of her honour, and ready to fight her battles.

It is now universally admitted, that a great nation of people have been annually, and for a long series of years, in a state of absolute starvation, under which many have sunk; whilst a still greater number have perished from the casualties and diseases which it had primarily engendered. Millions of acres of unreclaimed bogs have from the creation been suffered to remain utterly valueless; and man, noble man, framed in the image and likeness of his Creator, is denied their use.

The divine command, that man should till the earth by the sweat of his brow, appears peculiarly applicable in these cases. Whilst pastures remain for ages without requiring the hand of improvement, unreclaimed bogs must receive laborious cultivation before they can bring forth the fruits of the earth. These same bogs, whereupon fertility and abundance might be produced, are permitted to rot in barrenness and desolation; whilst thousands of human beings are annually starving upon their borders; allowed small holdings of the land around at exorbitant rents, but denied a portion of that which is now lying useless, and ought to be considered their rightful and natural inheritance,

as the children of the soil, who have no regular means of subsistence.

At length Providence itself interposed to prevent the continuance of this yearly increasing and universal misery: in a few short months, the wretched food on which the people hitherto had contentedly subsisted was swept away, and with it, hundreds of thousands, if not millions, of human beings, to a home where they will meet both mercy and consideration, and that reward to which their Christian resignation under the greatest of all human sufferings entitled them; and where all will have to appear, even after the judgments of this world, to render an account of their stewardships.

The people continued to cling to the public works as to existence; they saw the lands continue untilled, although three times the amount of tillage was required to make up for the potato deficiency, and that their only chance was to avail themselves of the means offered to them for the relief of their present sufferings, and hope in the adoption of more profitable measures for the future. These hopes were in some degree strengthened, if not engendered, by the promise of seed made at the time.

It was doubtless a pledge from the British Government, and that pledge may yet be redeemed in a manner most grateful to all in Ireland possessing a spirit of independence; that is, by giving them the means of improvement and extended tillage of land for this year, *from their own resources;* indeed, from the very mode adopted of taxing the lands for the support of its population, the first duty of all property. This would be the safest and most speedy mode of saving human life and tranquillizing Ireland; it would create a spirit of industry, improvement, and contentment in the country, and render a more remote contingency the repetition of the horrors of last year, and the possibility of future famine.

CHAP. II.

PUBLIC WORKS. — DIFFICULTY OF SUBSTITUTING OTHER SYSTEMS. — CLASSES EMPLOYED. — THEIR DUTIES. — REMARKS THEREON.

THE late public works were an expedient got up in a hurry, and a sorry expedient they were. The Board of Works feel as much the discredit attachable to them as any persons can do; but many allowances must be made for the imperfection of the system. It may be asked why were not the people employed at Drainages, or even in the fields, where road improvements were not required? To that it must be answered, that any thing of a reproductive character must take time to devise and prepare. Drainage, for instance, would require minute investigation, levels, surveys and plans, occupying much time; whereas a road improvement, after merely riding or driving over the ground, could be commenced forthwith; the levels being taken afterwards to show the

extreme lengths and depths of cuttings or embankments.

To send the people to till the lands, as some recommended, would be a matter of very serious difficulty, unless it were done universally: as all would discover some reason why their land should have been tilled, as well as that of their more fortunate neighbours.

When we reflect upon the want of materials, and of the millions who were employed, it is a matter of wonder how it could have been at all accomplished, and certainly shows that there had been, to say the least, the most indomitable energy on the part of those gentlemen whose fate, confined in their "easy chairs" from morning to night, no one could envy.

Those persons acting in conjunction with that body had, at least, the advantage of a sufficient alternation of air and exercise with their more sedentary occupation.

The different classes employed under the Board of Works were as follows: —

Working Labourer.
Gangsman.
Steward.

Check-Clerk.
Office-Clerk.
Storekeeper.
Draftsman and Surveyor.
} These comprised the Engineer's private or office staff.
Head Steward or Overseer.
Pay-Clerk.
Baronial Check-Clerk.
Valuator.
Assistant-Engineer.
District or Conducting Engineer.

There were likewise, generally in each county or in stated localities, INSPECTING or TICKET OFFICERS; also INSPECTORS OF FINANCE, through whose hands the accounts passed. These officers and the conducting engineer were meant to work harmoniously together, without clashing, in the slightest degree, in their departments. Such, however, was not generally the case, from some one or other of them imagining himself superior, whereas their duties were entirely independent of each other. The head engineer had the sole projection of all works, and control of the men upon them, as well as of all that related to such works.

Duties.

The INSPECTING OFFICER, generally Military, had the management of the Tickets jointly with the Relief Committees. They were drawn out by the Officer from lists, containing the names and addresses of families requiring employment, the land occupied, together with known stock or capital, as, for instance, so many barrels of oats, wheat, potatoes, &c.; so many cows, horses, pigs, &c. &c., and the quantity and quality of the land. The Inspecting Officer had ample occupation in making out, altering, and transferring these lists, as circum-

Remarks.

This system was productive of an immense amount of abuses. The Tickets were obtained in false names, or exchanged, and sold to parties bearing the same name. Great difficulty frequently arose as to which of two or three parties was the real owner, there being generally one or two prevailing names in each district. On applying to the Relief Committee, the answer was generally, that all were put down for employment; but they could not exactly state the individual owner of each Ticket; neither could the In-

Duties.	*Remarks.*
stances constantly required.	specting Officer, on being referred to, give any assistance. Sometimes a person leaving the country, or not desiring to go on to the Public Works, obtained a valuable consideration for his Ticket, from those who ought never to have required relief, and not unfrequently two persons worked upon the same Ticket. There appeared to be no settled system for each district; sometimes the Tickets were held by the Engineers or Overseers, sometimes by the people.

There was only one certain way of remedying the chief abuse here set forth, viz. to identify each individual with the name upon the Ticket. This might have been accomplished by having each one printed in duplicate halves, similar to a Bank-cheque, and filled up with some particulars to identify the party, as, for instance, apparent age, stature, etc. This would have prevented a son or grandson of the same name being employed by mistake, a case of daily occurrence, and which, by the existing mode, there was no means of proving. The Tickets might have been divided in the same

manner as a cheque, one half to be kept by the labourer, the other by the Pay-Clerk, according to the existing plan, but by the Check-Clerk if the system of sureties recommended (p. 63.) were carried out. By this means would have been prevented those mistakes and fraudulent alterations of Tickets, and other subtle evasions so general at the time, and which nothing but calling in and examining all the Tickets of the country frequently could have avoided. This would have been a Herculean task, and would most probably have stopped the works for some time.

Duties.	*Remarks.*
The RELIEF COMMITTEE comprised, as is well known, the most respectable inhabitants that could be found to attend, and the greater part performed their duty most spiritedly, meeting day after day to help in staving off	This the supervising Engineer had little opportunity of remedying. Often in passing from district to district have I seen the poor enfeebled labourer, young and old alike, laid down by the side of the bog or road, on which he was

Duties.

the impending calamities or in modifying the ravages of famine. This, however, was unfortunately not always the case — in some instances it was made a system of gross abuse; the Committees too often placing persons upon the lists by favour, who were well able to support themselves; and this to the exclusion of the poorer neighbouring tenantry of parties not upon the Relief Committee.

Remarks.

employed, too late for kindness to avail, nevertheless giving his dying blessing to the bestowers of tardy relief.

It was objected to employ persons who were known to have either stock or money; thus the industrious man, too honest to deny what were his means, frequently lost the earnings of an entire life; and the fifty or hundred pounds which should have gone to till his land, and provide for future years, went to support his family. To avoid this, as I have before stated, numbers emigrated, and those who remained in hopes of some change for the better, were too frequently, before the close of the year, brought to the same resource as the most improvident.

I consider that all who sought employment should have had it, for surely men who would accept work at 5*s.* per week, a sum equivalent to 3*s.* in seasons of plenty, surely such men could not be too opulent for employment. This I, at the time, strongly advocated, and had it been adopted, would, I doubt not, instead of being an increased expense, have proved a saving. By making a favour of employment all tried to succeed, and sooner or later most did so; but by making it general, it would no longer have been sought after, by those who really could avoid it. Besides, the substantial man generally managed to get his sons engaged as Stewards and Check-Clerks, through his interest with the gentry, or their superior education, so that the evil of the former plan still existed without any of its advantages.

All the irregularities, and in some cases jobbing, of many Relief Committees, would, at the same time, have been entirely avoided.

Duties.	*Remarks.*
LABOURERS. This class were at first generally employed by	For instance, supposing a hill required to be cut down, and

Duties.	*Remarks.*
day-work; afterwards, a system of Task was adopted, each gauger and his men having allotted to them a portion of a road to cut away, for which they were given a certain price per cube yard, as it was removed; the maximum rate being 1*s.* 6*d.* per diem. This system was obviously most difficult, and led to much scheming and imposition. In the first place, it was frequently impossible to find a sufficient number of persons competent to measure up work, and even where these persons were obtained, a correct system of task-	two gangs placed at equal distances from the top, on the opposite ascents; the men are to cut twenty yards forward, and one yard deep, at 6*d.* per yard, the road being ten yards in breadth; to all appearance, this work will be fairly and equally allotted; yet, on the one side, they might earn 2*s.* or 2*s.* 6*d.* per diem, and on the other, they would not make 6*d.* This arises from the difference of stratification; on one side might be found nothing but sand, or sand and gravel, whilst on the other,

Duties.	*Remarks.*
work could not, in many cases, be adopted.	large blocks of boulders might appear that would require breaking, or even blasting up, ere they could be removed; nor could this be remedied, as was suggested, by first breaking into the ground; every yard might vary from rock to sand, as is frequently the case. No contractor, even on the largest scale, can be certain of his prices; he will lose on some, and gain upon others, and frequently the difference of 1*d.* in the yard in heavy earthworks, such as docks, or sea embankments, would suffice to make a fortune, or a bankruptcy. The only fair way I could find, was to adopt a scale of prices for every kind of materials, and to pay the men according to the nature of the obstacles they had to encounter; any differences with the Steward, or Overseer, being referred to the Local Engineer, or to the Conducting Engineer, when necessary.

It was strictly enjoined that animal labour, as far as possible, was to be prohibited, in lieu of which wheelbarrows were to be employed, as giving a greater amount of labour. This was

clearly a misconception. Horses, mules, asses, and carts, when employed, certainly did five times the work, but at one quarter of the cost, leaving the balance for extended employment. Wheelbarrows are only useful in the removal of material a few yards; beyond that they are decidedly objectionable and expensive, and doubly so, considering the weak emaciated state of the people, in some cases scarcely able to lift the handful of material placed in the barrow for removal.

The carts did the work at one quarter of the cost, leaving the balance for extended employment. Frequently the children of the aged, or widows, were allowed to bring their horse and cart, or even to hire them from others, so as to earn a subsistence amongst the rest. So far from this being objected to, they have even been known to lend their own horses and carts to their poorer or more afflicted neighbours, and allow them to come as one of their gang, dividing the pay resulting from the labour of the more able-bodied.

The GANGSMAN was appointed by the joint concurrence of the gang, and the Steward, or

Overseer, and chosen from the most intelligent and industrious men in the country. He kept a book of the time of each of his gang, and was responsible for the amount and quality of their work, and for their tools, for which he was allowed 6*d.* per day more than the other workmen, and deducted from their pay.

The STEWARDS were as much as possible chosen from men connected with public works, assistants to road contractors, land stewards, &c. They had charge of the particular work in the locality, and on them mainly depended the amount of energy displayed by the labourers.

Duties.

The CHECK-CLERKS were generally taken from the body of schoolmasters, teachers of writing, clerks to loan societies, and not unfrequently, to their credit be it said, the sons of reduced country gentle-

Remarks.

By a combination of the inferior officers, fictitious names could be introduced, or men registered as employed, who never worked at all, and the same with horses, etc. These frauds were practised in many varieties, the

Duties.	*Remarks.*
men. There was generally one to every two stewards. He kept the time of a certain number of men, and his books were compared, at the end of the week, with those of the Steward. Check sheets were then prepared, which were revised by the Overseers of the works, and from which the pay sheets were afterwards compiled.	parties being merely agents for the transfer of money, chosen in a hurry, and such as could be found in the county. I recommended a plan to the Board of Works by which many of these frauds would have been avoided, money saved to the country, and what was expended have gone in many cases one quarter or a third farther. The existing difficulty was

this: the Pay-Clerks were occupied every day in the week at different places, and the poor, not being paid regularly, were obliged to get trust from the truck-dealers of the country, at most exorbitant prices, frequently above those of the market — so that their wages were eaten up before they received them.

I recommended, therefore, that each Check-

Clerk should produce small sureties, say two in 50*l.* each; this could readily be accomplished, as the gentry were always anxious to have vacancies filled up by their own immediate connections or favourites. The Pay-Clerk then, instead of being detained at each pay-table watching a total of one or two thousand persons paid, whom he could not possibly know by sight, should leave the money for each locality with the Steward and Check-Clerk. All Ireland might then have been paid on the same day, and the remainder of the week employed by the Pay-Clerk in revising accounts, and making investigations into doubtful or fraudulent cases. Many of these were passed over through the necessary hurry of the Pay-Clerk, knowing that hundreds were at the moment waiting, too often fasting, for his approach. The Stewards might be sent each pay-day to different places, to prevent collusion between them and the Check-Clerks, and of course rewarded for diligence and integrity. Frauds could then rarely occur.

The system subsequently adopted proved very successful in preventing errors. I paid a good rate of wages to the Check-Clerks, and for every mistake in his pay-sheet, I made a fine, according to its importance and the frequency of its

recurrence; and this fine was deducted at the pay-table by the Pay-Clerk. This, in the end, made tolerable clerks of them all, and gave my engineers some of the best pay-sheets in the country.

Duties.

The OFFICE-CLERKS were so many auxiliaries to the management of the Conducting Engineer's business. They were employed in copying the letters, and examining the books of parties employed, in examining all bills and pay-sheets, certificates of parties seeking employment as stewards or check-clerks, of which there were always about two hundred, besides the same number already employed.

Remarks.

The giving appointments was a matter of exceeding delicacy. Abundant presents of game, wild fowl, and even bags of potatoes, were sent from parties never before heard of, but they were invariably returned. Being a stranger in the country, I could have no personal interest in, or knowledge of, those employed. Any one seeking for an engagement was, therefore, required first to write a letter, stating what he had been ac-

customed to, etc. If he wrote too ill for a Check-Clerk, he was then examined by the chief Office Clerks in arithmetic for a Steward, and if found to be quick at figures, he received a few lessons in measuring up works, was placed first upon the list for employment, and sent home to instruct himself, with the assurance that as soon as found perfectly competent, he would be engaged.

Sometimes a good practical man could not write at all; he was then generally employed on larger works as assistant steward. Still, much annoyance was created by employing the most competent first, as it was difficult to prove that it was not favouritism. The only course to be adopted, was an undeviating line of strict duty, independently of all opinions. The fortunate result of this conduct was, that I left the country in good will with all parties and classes.

The STOREKEEPER'S duty was to take charge of all implements sent from the board for the use of the labourers; to procure the necessary stationery; and to keep an account of all that passed through his hands, to the credit of the Board of Works.

DRAFTSMEN and SURVEYORS were employed

in making surveys, levels, and plans of roads to be made and altered; also in preparing for the valuation of damages.

The OVERSEER or HEAD STEWARD was generally a land steward, master mason, or road contractor. He was supposed perfectly to understand the laying out of engineering works, their prices and measurements. A first-rate overseer was invaluable; he would keep a whole district in order, remedying all abuses on the spot, and seeing and explaining the reasons for works that without him, or with one less intelligent, might create a feeling of distrust in parties locally interested. His duty was likewise to superintend his stewards and check clerks at the pay-table, acting jointly with the pay clerk.

Duties.

The PAY CLERK, having the responsibility of taking the money through the country, and paying the men, had to provide sureties; and was

Remarks.

The system of public works had only just commenced when I first arrived, and both delay and confusion to a very great extent existed for want of a

Duties.	*Remarks.*
generally supplied by the engineer with a couple of armed policemen, in some cases a very necessary safeguard. At the pay-table, especially, which he superintended, great confusion sometimes arose, notwithstanding the regularity of the mode employed. The names of the men were called out; each advanced in turn, to an inner room or barrier, and signed his name or mark on receiving pay for the number of days in the week to which he was entitled. The pay clerk was expected to attend every Wednesday, Thursday, Friday, and Saturday at	sufficient staff, particularly pay clerks. Each of these had a district marked out by the engineer, and for the works of that locality alone did he receive money, with which the grant on each distinct road was debited. In one situation, along a line of road of nearly twenty miles, the people had been set to work without a pay clerk, and had been for three weeks without payment for their labour. I rode along the line, and found them all in confusion, and in a most deplorable condition. It is unnecessary to revert to the har-

Duties.

appointed places; Monday and Tuesday being allowed for him to examine his accounts. These pay sheets were then delivered to the assistant-engineer, who scrutinised and certified them: — They were then forwarded to the head-quarters of the conducting engineer to be examined by his clerks, signed by him, and finally forwarded to the office of Public Works at Dublin.

Remarks.

rowing scenes that here occurred, they have already been made public through the press of the time. I pledged myself that in the course of that day, I would either be with them myself, or send some other person to give them subsistence, even if it came out of my own pocket. One of the Inspecting Officers, who was driving with me, humanely offered to return from an engagement he had first to keep at the end of the line, a distance of twenty miles, to pay them, if the money was provided by that time. Subsequently, however, this gentleman finding his engagements were such that he could not return, I drove off into another direction to seek for one of my

pay clerks, and after about twenty miles' journey, I found him paying the men of the district. On my stating the greater and more pressing necessities of the others, the noble-hearted fellows at once gave up their prior claims and their money. This I did not altogether allow, but having left them sufficient to keep the wolf from the door, I went off with the pay clerk, arrived at about eleven o'clock at night, and found the people, relying upon my word, still waiting.

They never forgot this, and at times when obliged to use severity, they bowed to it with the submission of children.

Many circumstances similar to the foregoing arose in the first practical working of the system; and I dread to think of the amount of sufferings endured by labourers and their families, in those localities where the employers, neglecting their duties, appeared to consider their individual comforts of more importance than the privations or existence of thousands.

I speedily found the difficulties of my particular locality, difficulties that two persons before me had declined to continue. I at once

saw that our duties were those of Poor Law overseers, as much as those of engineers.

The BARONIAL CHECK CLERK was employed over a number of check clerks, to make inquiries into all abuses, examine the books of the subordinates, and report upon the same to the principal engineer. He had rank sufficient to give him influence, coupled with education and ability. The situation was generally more of an honorary than a profitable nature.

Duties.	*Remarks.*
The VALUATOR was employed to put a price upon all lands, as to the amount of damage done in the execution or non-completion of the works carried through them.	I have already had noblemen and their agents with me to know what compensation they ought to receive for the bog cut through by a new road. This, I fear, will be pretty frequently the case by the present mode of procedure. I propose that, on the other hand, they should be applied to to state what amount of assistance they are prepared to give to these works, and that in cases where their terms are unreason-

able, the Board Officers should be at libery to adopt entirely their own views with respect to the roads or drainages required through such lands, which might afterwards be valued in the usual way, and the costs attached to the property.

Many cases of extreme hardship to the poor occurred in taking away a great portion of their small holdings. Where differences arose as to damage, they were referred to the County Jury; but where useless roads were left incomplete, dividing a man's field directly in two, or by making a deep cutting in an existing road, blocking up the approach to his house or farm, it is matter of question whether all the money expended or good effected by the public works will compensate such individuals for these real evils. In fact, the Board are only beginning their difficulties. This is now becoming a much more abundant and less troublesome harvest for the lawyers, than was derived either by the Board or their officers in the first instance.

THE ASSISTANT or LOCAL ENGINEER had the entire control over all parties on his works, recommending whom he thought advisable to

the senior engineer, through whom all appointments or dismissals were made. The assistant forwarded every week to his senior officer, accounts of the amount of money likely to be required on the different works in his district; this was added to those of other districts, and all were revised and sent to the accountant's office at Dublin; the money was then immediately lodged in the Bank, to the credit of the different pay clerks as required. The assistant likewise furnished his own tradesmen's and all other bills: these were revised by the engineer, and sent to the accountant's office for payment at the close of each month.

Duties.

THE CONDUCTING ENGINEER'S duties were of a very multifarious and onerous character. He was responsible for the correctness of all accounts from assistant engineers, the prices and correctness of all tradesmen's bills, for the correctness of the

Remarks.

As the chief value of an engineer was out upon the works, where by diligent attention he might save hundreds of pounds in the course of a week, his time was utterly lost in office duties. Had there been a secretary, or official person authorised by the Com-

Duties.

pay sheets, some hundreds of which passed weekly through his office; likewise for the tools, and all other matters in the localities of the assistant engineers; and for the designs of all bridges, and other works undertaken. He conducted all correspondence with the inhabitants, and with the Board of Works, relative to his locality; also all accounts with the accountant of the Board of Works; besides having a correspondence with the district accountant, the inspecting officer, and most of the relief committees, to the extent of twenty or thirty

Remarks.

missioners, he might have been responsible for all office duties, and correspondence of the indoor management; when any further explanation was required, it might have been given by the engineer, who would thus have been of threefold value to the government and the country.

There would have been few questions that such an official could not answer: if relating to the office, it was under him alone; and if relating to works, by writing to the assistant engineer he could have obtained the necessary information: all would have

Duties.

letters a day; and giving audiences on matters of business to all parties.

The conducting engineer had calls in every direction, and at the same time office duties sufficient to occupy fully the time of any one person — he was responsible for every letter that left his office, as well as for the amount and accuracy of the information it contained — the consequence was, that, fearing to trust to any subordinate, he was too frequently obliged to hurry through his correspondence, in order not to neglect other important duties.

Remarks.

been compiled ready for the post, on the engineer's return in the evening, when any thing he wished might have been added.

In most cases engineers make poor clerks, so that by such an officer as a Secretary being appointed by the commissioners, even if chosen from the engineer's staff, there would have been, in the first place, a material saving of the Engineer's time; and secondly, the Commissioners would have obtained more careful and fully investigated information.

Even such minor deficiencies worked practically against the system.

Notwithstanding all this, he was expected to account for each particular road, its cost and direction, and all details, even though it might be under an assistant engineer, and twenty miles from his head quarters. He was expected from time to time to travel over his entire works; he had, moreover, a newly organized staff, and was required to drill them; so that, upon the whole, he had more responsibility than any person connected with the public works; and an amount of duty to perform that he could not have got through, even if he were able to live entirely without rest: and yet much surprise was manifested if any thing was discovered undone.

Another duty of the Conducting Engineer, was to attend all meetings of Extraordinary Presentment Sessions, and there recommend such works as he might think advisable, or object to such as did not appear expedient. The names of all new works proposed by the Chairman and cess-payers, were then given to the secretary of the Grand Jury, who attended the meeting, and by whom they were forwarded to the Lord Lieutenant, and thence, through the Board of Works, back to the Engineer, to

report upon their individual features and utility. The works were generally either executed or abandoned, according to this report; the details of each were kept quite separate, and the monies expended made an entirely distinct transaction for each work. Where the allotted funds were expended before the completion of the work, a renewed grant was given at the ensuing Presentment Sessions.

Sometimes money had to be sought for three or four times, which in ordinary circumstances would certainly not have been necessary. This could have been prevented by letting the works in small contracts, and tying the contractor to the minimum rate of wages to be given, — there might have been some evils in this plan, but the advantages would have been a hundred-fold over the adopted system. The cases where works were finished within the estimates, occurred where there was less destitution, consequently more able-bodied men; where the works were under men that could be depended on as assistant engineers, overseers, or stewards; or where the works were in the neighbourhood of others taken in hand by the conducting engineer. In all such cases, as far as I have

known, they have been completed at a fair price, and within the estimates. Some of the officers employed were corrupt or indolent to a degree that neither coercion nor reward could remedy: with such materials, no work could be done properly, or at reasonable prices; it was making men into sergeants before they were soldiers; and certainly it was a season of great anxiety, and no sinecure for those engineers depending upon the employment: they formed a sort of general target for the shafts from the people, the authorities, and last, but not least, the landlords.

If a road was not commenced through some district where desired, it was the engineer who refused it; and if one was commenced, where not desired by the landlord, it was the engineer who had ordered it, albeit passed by his neighbours at the Extraordinary Presentment Sessions. Fortunately, in my neighbourhood, they were for the most part both talented and reasonable men; but I saw enough to judge what it must be where reciprocity did not exist.

The engineering conduct of drainage districts was sometimes placed in the hands of separate engineers from those upon the Relief

Works. In such cases, and if the works were small, they generally paid their own men. In others, the engineers of Relief Works had the management of surrounding drainages, which were of course kept perfectly distinct accounts from the other works, being paid from an entirely separate fund.

The INSPECTOR of FINANCE was a subsequent appointment in lieu of the Inspector of Pay Clerks. The object in appointing this officer was, that he should revise all local accounts, and act for the accountant as agent; in the same manner that the engineer acted for the Board of Commissioners.

I have endeavoured to point out all the main difficulties of this system as I proceeded; but from a desire to be brief, I have not gone into that detail which a perfect explanation would require. Nevertheless it will be readily seen where trifling modifications might have been adopted. In completion of the subject, I will here subjoin the further objections of the system in use, and the improvements of which I consider it to have been susceptible.

CHAP. III.

DEFECTS OF THE FOREGOING SYSTEM. — REFUSAL TO TILL THE LANDS. — EXPERIENCE OF THE PAST.—EMPLOYMENT OF MILITARY.— ANECDOTES. — CASE OF INSUBORDINATION. — POLITICAL AND RELIGIOUS DIFFERENCES. — RULES ADOPTED. — MISMANAGEMENT IN OTHER PLACES.

THE Public Works were conceived and carried out in a hurry, and to meet an emergency, otherwise much improvement might have been introduced in the mode of labour. In my experience the Board of Works always paid every attention to suggestions, but to adopt an important change would have been to re-organize a system. It would have been impossible in the existing state of the country. A course of procedure was resolved upon, which there was scarcely time or assistance to put into operation, much less to re-model.

No other system of labour could have been undertaken at so short a notice. It was the organization of a vast army, larger than that

of Xerxes, which, in a few weeks, could not be either reformed, or disciplined.

Where the mistake arose was not in commencing at road improvements, but in keeping the people there too long, on what were no longer improvements; in not preparing works of drainage or agricultural improvement, whilst they were occupied on the roads. They were thus *literally* "in the lanes when they should have been in the fields."

It is not in my experience that the people, except in one instance, refused to work upon the lands; had they done so, when required by the landlords, and offered the same prices as on the public works, they should have been immediately dismissed; and the responsibility would have rested with the engineer, and not with the proprietors, as some have said. Indeed, I fear that this was too often advanced by those who were without the power, or perhaps the will, to cultivate their estates: although it could not but be expected that men on the verge of starvation, many with helpless families to support, would make every effort to obtain the highest possible wages for their labour, and sacrifice to the emergencies of the

present moment all consideration for that future which they scarcely expected, and many never did reach.

The case of refusal referred to above was the only one which occurred within my jurisdiction; and being somewhat anxious to ascertain the particulars, I went to the residence of the gentleman concerned. Hearing that he was not in, but momentarily expected, I went to the stable to see my horse sheltered, and in the barn found the very men engaged thrashing. In answer to my inquiries, the poor fellows informed me that they were required to work to pay off *an old debt*, receiving nothing for themselves or their families to prevent absolute starvation.

On the other hand, this was an equally unfortunate case for the landlord, who would have been satisfied with even work for his tenants' conacre arrears, but could not obtain either meal or malt, and most probably had at the time to meet heavy taxes.

To supply the loss of the potato as an article of food, three times the quantity of land was required to be placed under tillage. This would have taken an entire year to prepare

with the plough and all the mechanical appliances of agricultural labour; instead of which, the people were literally new stoning and blocking up the highways of the kingdom, cutting away the solid crust of the road, which, in some places, will entail years of increased expense to the country, before they are again consolidated. We have now the benefit of this experience, and it will require to be immediately acted upon, or the country will not be prepared for future emergencies, and will have to be importing instead of exporting; although, to redeem herself, she should export provisions to a very large extent next year.

Let it not be said that there was no time properly to mature a system of reproductive employment. Is there a landlord in Ireland who would not willingly have pointed out the thorough and field drainage required upon his lands, and superintended the trench-digging, whilst engineers were surveying the main outlets?

There can be no doubt that to a certain extent the Public Works were a system of fraud and demoralization; but when properly conducted, that was almost, if not wholly, pre-

vented. As the stewards were the persons on whom most depended, and as they were untried men, I am of opinion that army sergeants, corporals, and even well-conducted privates, might have been placed as under stewards over each work. Of this I had more opportunity of judging, as a part of my works were in the locality of the great central military depôt of Ireland—Athlone. The extensive employment, as stewards and check clerks, of all ranks of pensioners, proved that one half of the army might, with great advantage, have been placed over the public works, as well as the inspecting officers. These men could have been paraded, when opportunity occurred, by their nearest non-commissioned officer; but, looking at it in the broad view, a six months' leave of absence would have done no harm; and a little extra pay, as an encouragement to the best, would have inculcated habits of industry, instead of having, as at present, 100,000 idle men like a log around the neck of an already overtaxed people. In Russia, the military are not alone conducting, but absolutely executing, the public works.

This employment ought not, however, to be

carried on so as to allow no time for parade, or otherwise to subvert discipline. It should, in fact, be properly done; and if so, the military would derive a more healthy tone of mind and body.

Some Colonels are most anxious to promote athletic amusements amongst their men. This would at once accomplish that desideratum, with the additional advantage of self-interest.

Instances at times occurred of the men being absent from their work, although attending to the roll call morning and evening. When this was suspected, a muster-roll was read in the course of the day, and the men found absent referred to the engineer, who at once struck them from the employment list. These cases were, however, extremely rare; the offenders generally obtained some respectable persons to *go bail* for their amendment, and after about a week's idleness, to prevent absolute starvation, they were again employed.

General risings of the men, from some real or imaginary grievance, was a matter of much more serious importance. On the rate for task-work being struck, although found to press very unequally, it was rigidly maintained, without modification, by some of the engineers.

At one place, where several hundred men were employed, the assistant engineer, irritated by their complaints, made use of some hasty expression, and was instantly surrounded by the men, who demanded the old system, declaring that otherwise they would soon be rid of both stewards and check clerks, and even engineers if necessary.

Seeing the rising storm, the party rode away, and in so doing, was pelted and struck with a heavy stone, which probably, but for the rate at which he was going, would have had as much effect as a bullet. Being in the neighbourhood on the occasion, I proceeded to the scene of tumult; and represented to them that if they did not wish for engineers, they should not have them, but would probably be having in their place the military, with bayonets instead of bread. They listened to reason, and I having agreed to accede to the most moderate of their demands, they expressed their willingness to recommence work on the new system. My inquiries, however, for the party who had thrown the stone were of no avail — neither promises nor threats would induce them to name him, and the whole of the gang were

consequently dismissed from the works. Not an hour afterwards, the parish priest, by his influence alone, effected what all other efforts had been unable to accomplish, and having discovered the offender, horsewhipped him through the village. The latter, a week after, absconded to America.

This circumstance occurred in one of the worst parts of Ireland, and in the very hot-bed of Whiteboyism.

Religious feelings in every country should be allowed to find their own level, and as much as possible prevented from forming state questions. Bigotry, prejudice, and rancour would then die a natural death — expire for want of fuel.

The landlords of all parties, and both Catholic and Protestant clergymen, used to visit us for appointments; and meeting with perfectly similar treatment, without respect either to friendships or similarity of creed, they soon began to discover, what we from the first had considered, that religion, in the sectarian sense of the word, had nothing whatever to do with the question, no inquiry being ever made as to what any man's religion or politics were. We had

thus on the officer-staff, Catholics, Protestants, Unitarians, Methodists, Quakers, and Jumpers; Whigs, Tories, Radicals, and thorough-bred Orangemen; superannuated policemen, gaugers, pensioners, church and chapel clerks, and every possible rival combination thrown heterogeneously together, with a view only to their different capabilities; and certainly most ludicrous were the combinations which sometimes arose from such circumstances. On one road we had a Scotch Presbyterian overseer, an English sergeant who was a pensioner, a Protestant, and an Orangeman, and an under steward, a rigid Catholic and chapel clerk, — all excellent men in their way. We never had religious or political subjects mooted in our business, and therefore never permitted it in our subordinates. The sight of persons of such opposite habits and principles at the same pay-table, working harmoniously together, a kind of "United Happy Family," had the best possible effect upon the people, although they could scarcely understand how it existed.

The rules adopted in my department, and without deviation from the letter of the Commissioner's instructions were as follows*: — I found them to work exceedingly well, — all variations from these plans by the subordinates, not satisfactorily explained, were subject to fine.

1st. Estimate of probable expenditure, to be furnished *to my office every Monday forenoon.*

2d. Return of expenditure on each item, *on and up to every Wednesday.*

3d. *Pay and check sheets on Thursday morning.*

4th. Weekly returns *every Saturday at 5 p.m.*

5th. *Assistant engineers may suspend, but not dismiss subordinates, or otherwise make alterations or appointments in the staff, but to refer all such cases to the chief engineer.*

6th. Fines to be instituted *for minor cases, instead of dismissal. The account of such fines to be kept by the storekeeper, and applied to the Government Fund in aid of the destitute of that particular district.*

7th. Stewards having to measure up works, not to be given too extended a district: but a

* Those printed in italics were my own regulations — the other parts were compiled from Board orders.

superior man and good measurer to have an assistant steward.

8th. *Each head or measuring steward to be provided with, and carry constantly about him, a six-foot measuring rod, in order that he may, at any moment, be enabled to ascertain the progress in labour of a gang; also a two-inch contractor's ring, to measure stone. It is necessary that each gang of stonebreakers should possess themselves of one of these — a piece of deal bored will answer. General measurements to be made weekly, and in time for the weekly payments.*

9th. *Assistant engineers are responsible for the system, economy, and tranquillity of the works in their respective districts. These being the first tests of superiority; details to be forwarded to my office on the printed forms provided: a duplicate of the same to be retained.*

10th. Assistant engineers in no cases to undertake the purchase of articles or the manufacture of tools. *The chief engineer will take the responsibility of loss arising from the want thereof, and must immediately be made acquainted with such, and all other requirements.*

11th. Ample notice to be given of the closing

of all works *or changes required in the number of men.*

12th. Gangsmen to have charge of tools, and 6d. in the pound *for every pound above* 8*d. per day subsistence earned by the gang.*

13th. *All carts employed on the public works to have either large kishes or wooden sides attached; and in all cases where practicable, to be paid for as a part of the gang, otherwise by the cube yard of the material removed.*

14th. *Whenever such can be effected with advantage, and with the concurrence of the farmer, women and children to be employed in clearing the land of stones, to be used in the soling and macadamizing of roads; or, worked into banks with earth, they will make the most durable fences.* *

15th. *Stewards to be responsible for the correct filling up of the measurements prepared in the office; they must describe minutely the work at which each gang has been employed; the number of the gang; quantity of material removed;*

* In England and some parts of Ireland these fences are adopted, and when properly made they become coated with grass, and interlaced with fibres, and are known to last from fifty to a hundred years.

number of horses, asses, mules, or barrows employed, with the average load; the price agreed to be given; the average breadth, length, and depth, as taken, all filled up in their respective columns weekly; with any necessary remarks in the column of observations, and forwarded through the assistant engineer to my office weekly.

I will give a few extracts from memorandums made at the time, to show how the trust placed in the hands of some parties was abused. Of this I had an opportunity of judging, having been deputed to examine into works, where outbreaks amongst the people and great confusion had occurred.

Doubtless many modifications of the system of relief works existed; but in principle it was nearly the same throughout the land.

The chief difference in the one now to be described arose from allowing the assistant engineer an amount of control in stopping works and signing pay-sheets, which should have been vested in the conducting engineer alone; certainly not in those who abused the trust reposed in them. These errors, in too

many cases, existed as well with the inspecting officers and inspectors of finances as with the engineers. In this case, Col. E——, a gentleman of unbounded generosity, and the most refined feelings, was, at the same time, despatched to examine into the department of Capt. R——, a cold man and strict disciplinarian.

Having arrived at ——, I at once put myself in communication with Col. E—— and Capt. R——. I did not consider myself justified in seeing the engineer, from the double circumstance of not having specific commands in that quarter, and from a desire not to obtain information from him, that I might afterwards be obliged, however reluctantly, to report.

The country generally was in a deplorably pauperised state; in the looks of nearly all there starvation was visibly depicted. No greater destitution existed in any part of Ireland: whole families, and even villages, having been swept away through neglect by the famine.*

* In the vicinity of this district, north of the county of Roscommon, the most desperate murders have been lately committed, — tragedies revolting to humanity. Hundreds, it is said, had been compelled to emigrate, by

In the management of the system generally the following evils existed: —

The works were quite inadequate to the wants of the people.

They were let by contract to groups of men, from three to thirty in number, without gaugers, who were disapproved of. Much irregularity and error existed in the pay-sheets.

In cases where disturbances arose in any one district, the works of the whole barony were suspended, inflicting injury upon all, the guilty and innocent indiscriminately.

Task-work in some parts was used, but in others day-work was in operation.

In one locality the labourers at day-work did not commence before eight or nine in the morning. Those best informed state that the men frequently went to work at ten, to breakfast at twelve, returning at two, to leave altogether at three; and received eightpence per day.

ill usage; and in one vessel containing 600, not 100 survived; this left behind a spirit of wild revenge and recklessness, which, I have little doubt, has led to the commission of these daring crimes, probably by the surviving relatives of the unfortunate *Emigrants*.

Those at task-work had fivepence, and in some cases as low as threepence, per diem. In other cases, again, an opposite extreme existed, and as much as two shillings and twopence per diem was found in two instances to have been paid.

This naturally created much discontent and ill-feeling amongst those who were over-tasked and underpaid, and tended to increase the engineer's unpopularity with both rich and poor; so much so that he was obliged to travel armed and accompanied by two policemen.

I fear there was not in all cases sufficient sympathy for the present sufferings of the poor — a feeling quite compatible with a firm and honest discharge of duty. This inflames the minds of the people against the system generally, and they become victims alike to their own intemperance and the mismanagement of those placed over them. Throughout the country, in the majority of cases, disturbances are attributable wholly, or in a great degree, to such errors. Overseers acting more as slave-drivers than as the messengers of benevolence to an afflicted but warm-hearted people.

One road over which I proceeded with Col.

—— and Capt. —— had had an average of upwards of forty men for three months, whereas less than three weeks might have advanced it to a nearer degree of completion.

Another road, a hill-cutting, had had so small an amount of work executed, for the sum expended, that the cost of filling with a barrow run came to about five shillings per yard. By using carts a saving of at least two hundred per cent to the Government, and consequently to the country, would have been effected.

It must be said for the engineer, that he had been for some time ill, during which period he could not be cognizant of all the mischief and evils gathering around him.

The alterations I would suggest in this district may be condensed as follows: —

1st. Additional numbers may with advantage be employed.

2nd. Gaugers should be employed, and paid as the Board direct.

3rd. Works should only in the most extreme and urgent cases be stopped at all, and then it ought to be a local and not a general cessation.

4th. Task-work is not, but invariably should, in a modified form*, be adopted.

5th. More regularity should exist in the working hours.

6th. Fair and regular prices, averaging above day-wages, should be given.

7th. As much kindness as possible should be exhibited in the present sufferings of the people.

* See Remarks, Labourers, page 57.

PART III.

SOCIAL CONDITION.

CHAP. I.

FORMER MISLEGISLATION. — ENGLAND AND HER COLONIES. — LANDLORD. — TENANT. — NON-NECESSITY FOR EMIGRATION. — THE QUESTION OF INDUSTRY. — DESCRIPTIVE INCIDENT. — RECLAMATION BY NATURE. — ARTIFICIAL RECLAMATION. — GRANT OF A ROAD. — DEMORALISATION. — TENANT RIGHT. — A MIDDLE CLASS.

IRELAND is truly at this present moment, as she has always been, England's greatest difficulty.

That most liberal and conciliatory letter of the present universally respected Lord Lieutenant to the Catholic bishops, admits the fact of former mislegislation; and the same is evidenced by the numerous Acts of Parliament, improved, repealed, and altered. There yet requires a little more to be done; and that fine race of people will form the firmest link in

the regal chain, the brightest gem in the imperial diadem.

Unfortunately, England has too long treated all her colonies and possessions as mere dependencies, and not, as they ought, however distant, to be considered, as part and parcel of the great whole; provinces, in fact, of the entire nation. Those who have read disinterested accounts of our colonies, written even by *English* official residents, or conversed with others acquainted with these countries, will see that a feeling of dissatisfaction has been allowed to spring up; the emigrants are kept out of all honours and important offices of administration, and thus treated as inferiors or aliens. The bond of union, with the parents to the mother country, prevents any general outburst of indignation, but this feeling is not less existent; and as, in America, the children and descendants will forget those feelings of fraternity possessed by their predecessors, is it not possible to make these places as it were a part of England, to admit of their having representatives of their own in this country, and even in Parliament? At present, any remonstrance has to be made through a member of some English consti-

tuency, imperfectly acquainted or but slightly interested in their wants; unless it be a matter of sufficient importance to be taken up by the press, and maintained until it becomes a question of popular agitation. When is the day to arrive that statesmen will judge for themselves; and not require leagues to thrust alterations upon them? Popular agitation involves a degree of compulsion, and is, moreover, likely to become a very general system in this country. Men often yield against the convictions of their reason, and from repetition. Constant dropping wears even the rock.

With the present advance of European states, and the enormously increasing power of some, it is decidedly requisite to conciliate and strengthen our colonies; to give them such honours and privileges as they would meet with at home, and show them that their interests as well as their affections are blended and identified with British success and honour.

The landlords of Ireland generally are overwhelmed with taxes and difficulties; they have neither food to support their tenantry, nor money to employ them, or till their own lands; and two years of unexpected and unexampled

misfortunes, coming upon all unprepared, have left even the most wealthy crippled in their resources, and many destitute.

Those who have been leading a life of improvidence, crushing the unfortunate poor to obtain the utmost shilling of rents, are left with encumbered estates, untilled lands, enormous taxes, and a tenantry who cannot pay their arrears, and have nothing more to lose. Having "sown the storm," they are, in fact, "reaping the whirlwind." But a wide distinction must be drawn between such individuals, and those gentlemen of whom we have daily instances, who foster and encourage their tenants in a manner to make themselves equally respected and beloved.

The tenant is equally ill off; paying the full value for land, and being even in ordinary times generally steeped in poverty during certain seasons, he was unable to bear a single year of difficulties; much less three succeeding each other. Those who were best off, at once sold what they had, and emigrated, leaving the poorest behind; so that the burden of taxation now falls upon those least able to bear it; and certain it is that *the cess of the coming year*

must in a great degree fall upon this country, if some remedial measure be not forthwith put into operation.

On one occasion, expressing my surprise to the people that they did not occupy themselves in cultivating the land and preparing for the ensuing (present) year, the reply was characteristic, "Sure, your honour, the present must be helped first: it's time enough to shake hands with the divil when you meets him."

As matters are now proceeding, lands will be confiscated, and in many cases will not realise the amount of the claims upon them. Is it not monstrous, that whilst we speak of the necessity of emigration, a country requiring agricultural development as much as the wilds of Australia, adjoining the most enlightened, the most prosperous, and the most scientific country in the world, with credit unbounded, has hundreds of thousands of acres in a state of the most primeval solitude and barrenness; hundreds of thousands of tons of fish neglected annually; and millions of people starving?

I have noticed the greatest possible difference between the tenantry in their agricultural habits and industry. Even amongst the bogs

this difference is perceptible, and may be traced almost wholly to the proprietors and the terms of the respective holdings.

In one district, passing up the Shannon, the uplands were carefully cleared of large stones, which were piled into heaps of many tons through the fields; these were ploughed into broad straight ridges: the lowlands on the one side, the marshes to the river edge; and on the other, into the very bogs, pastures and reclaimed land were to be seen—presenting altogether an appearance of order and comfort that brought me in imagination back to the northern fens of Lincolnshire, bordering the chalk uplands of that district, which possesses perhaps some of the most liberal and enlightened landlords in England. The owners of these lands I found to be the best workmen in the county; they cut a better drain, and made a stronger turf fence, than any others. On inquiring from their neighbours why they did not follow so good an example, they replied, they had no leases, and that any system of high farming would be their ruin, as the agents would immediately come and raise the rents to a price that would not pay for the increasing tillage

Allowing for a little exaggeration, this doubtless was the case; and one of the great impediments to improvements in Ireland is the want of more rich or liberal landlords, or Tenant Right.

The inhabitants of this same district had for forty years been trying to obtain a road, being only three miles from one of the largest inland towns in Ireland, and separated only by a stream or small river. They had no other highway but the Shannon, which at times was most dangerous and even impassable for boats going to market. On one occasion I saw a "cot," as they are termed, containing a man and his wife, and heavily laden with turf, put off from the opposite shore. Notwithstanding their united efforts, it was almost immediately driven against the opposite neck of land, which they had hoped to have escaped; but it was fortunately sustained by a sunken beach, the river being at the time swollen by the floods; and another man put off in time to take the people into his boat, just as their own had filled with water and capsized, carrying with it the turf on which relied their hopes of subsistence.

And these poor creatures had been driven

by sheer hunger from their homes; they well knew the danger, for many had before perished at that same point; but they, probably, had a young family at home crying for the food which, being market day, they had hoped to obtain in exchange for their turf.

A road for that locality, of ten miles in length, would have been of incalculable benefit. It would have formed an extensive and longitudinal drainage on each side, and parallel to the Shannon, without approaching too close to that river. Little more would then be required to construct lateral drains to any extent to which it might be desirable to carry reclamation. It would have opened out an almost inaccessible district for the passage of manures, marketable or agricultural produce, where at present all is desolation, and likewise open a thoroughfare between two principal passes of the Shannon,—both important military stations. The main drain, like the main sewer through a street, would be a first necessary step to induce people to locate themselves on the spot, and vegetation would spring up on each side almost spontaneously.

It may not be uninteresting here to notice the

proofs afforded in nature. A stream or brook, being a natural drain, and running through a bog, is never to be found without fertility, generally a healthy pasture on either side. This is caused by the two-fold advantage; first, proximity of a good outfall, which, though it may run for miles, is *never allowed by nature to block up;* secondly, the lodgment on the land of alluvial matter, which runs down during floods, and which, mixing with the bog, forms the soil necessary to the growth of vegetable matter.

There would be little use in making either roads or drains without some stringent provision on the adjoining lands, to keep them to a certain depth and breadth. This would be best effected by a contract, and charging the cost in proportion to the length of the estate through which it might run. The importance attached to this in Lincolnshire, under circumstances of great natural disadvantage, is quite apparent. Flats of from ten to twenty miles there occur, where the slightest impediment would stop the already sluggish passage of the water; and every minor drain is kept as clear and straight as an arrow. The roads are amongst the best in England — so much so,

that in conducting works there, I have frequently, by mistake, taken a farm road, being equally good and wide, and a straighter line.*

The Bedford Levels, and other great artificial rivers connected with the drainage of the country, were formed at an enormous expense; whereas, in this favoured country, Nature has done all. — The Shannon may be said to be the great drain of the district, as it is of the entire kingdom.

The people of these districts, and others similarly circumstanced, had to walk from five to seven miles to the public works, frequently in the dark and through bogs, possibly in rain or snow, and in the depth of winter; they had then to work all day and in bog-drains, returning home seven miles, wet, cold, and hungry.

This is no picture of the imagination. Often have the men dropped down from fatigue, leaving a family, once comfortably off, to deplore the loss of their only protector.

* The minor roads there frequently have their turnings at right angles, as though subservient in utility to the fields, or an after-thought. This probably first arose from the circumstance of farm roads, or property boundaries, being afterwards converted into the chief thoroughfares of the country.

Seeing the imperative necessity of some practically useful works, and the inlets to bogs being of the highest reproductive character possible, I, after much difficulty, had one passed at the Extraordinary Presentment Sessions, and subsequently by the Lord-Lieutenant. This was considered by the inhabitants as a general triumph; and on the day of my laying out the line, fires were lighted on all the hills of the surrounding country. A meeting of the parish was called, and they determined that those who could afford it should give one fortnight's labour without charge; and the road was proceeded with at double the rate that could have been expected.

Let the worst of them see you are willing to help them, and they will go more than halfway to serve you. Of such opposite materials are their natures composed.

This place was the very focus of private stills and secret societies. These secret associations are hourly spreading and endangering the peace of the country. It will be said that a day of reckoning will come for these midnight assassins. It is to be hoped so; yet if this is Ireland's only panacea, her position at

the present juncture is most unenviable. The peaceable man himself, rather than allow his family to perish, will join the bands of the depredators, and in sharing the spoil from some neighbouring lands, will, in many cases, become entrapped as an accessary to the attendant bloodshed, and thus, through desperation, end with equal guilt.*

The establishment of a *Tenant Right* would soon enable a middle-class to spring up, and thus admit of that proper equilibrium of society that is so rarely to be met with in Ireland. The higher and lower classes are too far removed in station and feeling. The industrious yeoman would form the connecting link in the social chain; and, having himself sprung from the people, would be identified with them, constantly having them about him on his farms and in his dwelling. This would tend materially to repress secret societies; more frequent intercourse would have the effect of creating a feeling of affection between the classes; and the people would not be left so

* It is whispered amongst the peasantry of the west that novices are purposely attached to the most dangerous enterprises, to ensnare and harden them at the outset.

much in solitary hovels to their own fate or their own resources.

As a favourable mode of taking the first step towards the formation and extension of a middle class, I should venture to suggest that a portion of all bogs and unreclaimed lands be given to those who would undertake their reclamation, by employing the poor of the locality. This would obviate the payment in cash for such improvements, and likewise, in many cases, the necessity of applying to the Government for drainage grants, which, except on a very large scale, do not pay for a competent engineer; and to employ any other in such a matter would be running a risk of total failure.

There are many capitalists here who would be glad to advance money on such terms as the above.

CHAP. II.

LANDOWNERS. — NON-RESIDENTS. — MIDDLEMEN. — ANECDOTES. — INSANITY. — A FRACTURE. — VICISSITUDES.

I HAVE had opportunities of associating with all classes, as far as my time would admit; often glad to seek shelter in the labourer's bog-cottage, and having always a bed at my disposal from the highest personages in the country, whose hospitality is proverbial. Indeed the higher you go amongst the residents, the more genuine and disinterested philanthropy will you meet.

The *Chief Landowners* are generally satisfied with a reasonable portion of the profits derivable from the soil.

The *Non-resident Landowner* is acting either through agents or through middlemen, amongst whom his estates are divided. The former of this class is often guilty of a harshness that he would be ashamed to exert were the estates his own; but he is acting for another, and feels

that should he not do his duty to his employer, there are others to be found who will. Some, again, like the schoolmaster with his rod, feel a pleasure in severity; and there is war to extermination going on between them and the poorer classes, of whom, to judge by their conduct, they might be the natural enemies.

The *Middlemen*, paying a moderate rent for the land, consider themselves justified in obtaining the highest possible terms they can from the poor. They let conacre to a great extent, and some of them are most rigidly exacting, and often unjust, in their proceedings.

An incident connected with this class of persons, the middlemen, may be illustrative of some of the characters connected with the country. This party had perpetual leases of large tracts of land, formerly taken by his family at very low rents; and which, having become more valuable with time, brought him in a very fine income. In his mode of life he was exacting and thoughtless; he used to boast of the time in which he could drive his carriage and four into Athlone. Most of his days were spent in shooting and hunting with the beagles of his friend Col. White, of Houns-

low celebrity, and late of the 7th Hussars. He was celebrated for extraordinary feats of horsemanship and other daring, and certainly well deserved his reputation. As chief agent of the Board of Works, I was necessarily in continual communication with him, more especially as he was a magistrate and chairman of two relief committees; and, after one or two business calls, many and pressing invitations were given, that, in the course of my journeys, I would take a bed at L——. One unfortunate evening he discovered me driving along the high road to A——, at the end of his lawn, and thinking that further refusals might appear uncourteous, I accepted his hospitable invitation to stop during the night. I was shown his lands and large stock, which he considered to be worth at least 10,000*l.*

After being at his house on one occasion, he asked me if I could lend him a few hundred pounds for about a week. I expressed my surprise that, with his means and connections, he should require to borrow, adding, that I had been seriously out of pocket by the Board of Works' expenses. He stated that it was a private matter, of which he did not wish his

family to know, and he did not wish to sell stock at so bad a time. The sequel was, I gave him a cheque for between three and four hundred pounds, and in return got his bill.

Surprise may be expressed at my being so readily taken in; but parties of wealth in the country have since declared they would not have hesitated giving their names and being responsible for 2000*l.* or 3000*l.*, if he had applied to them. He was, however, not satisfied with this, but afterwards borrowed from every person round the country, and finally failed. On a previous occasion, when I applied for the money, he muttered some threat that before I was twenty yards from his door I should repent my visit, but subsequently made an apology. The first time I had at all a doubt about not eventually getting the money, it having been rumoured that he was going to leave the country, I drove over to his house to see what could be done about the bill, now long past due.

The night was dark, and it rained in torrents. His servant said he was not at home. This I afterwards found was not true; but at the time there was no remedy, and I spent the night at the house of a friend in the neigh-

bourhood. At about four o'clock in the morning we were roused by a loud knocking, and, upon proceeding with some misgiving to ascertain the cause, were informed that the whole family of Mr. ——, uncle to the magistrate at L——, had been murdered. Hoping this might prove to be one of the exaggerated reports so constantly in circulation, we ordered our horses and proceeded to the residence of the parties. When there we discovered the facts to be quite as horrible, though not so tragical, as we had feared. It appeared that the family had had on a visit to them a gentleman, whose brother had been imposed upon to the extent of one or two hundred pounds by the above-mentioned magistrate, their relative. During the course of the evening some words arose on the subject, and Mr. and Mrs.—— were most brutally attacked with a razor by their visitor, and most dreadfully cut in the head, throat, and face. A daughter of thirteen years of age, rushing between them, had her ear slit open, and the back of her neck cut across. The man-servant, hearing the outcry, burst into the room, grappled with the assassin, and knocked him down. The struggle was carried on from the rooms,

through the hall, and down into the lawn. The servant also was dreadfully cut about the head and legs; and the miscreant, taking advantage of the wounds he had inflicted, escaped. The country people immediately spread the alarm, and set off in different directions in pursuit. Two of them fortunately took the right road, and after some time met the object of their search, *walking towards them*, by which means he had hoped to double upon his pursuers. They did, in fact, at first pass him, but after a moment's reflection returned. He backed against a wall, and they, hearing a noise like the cocking of a pistol, rushed forward and secured him. He was taken back to the scene of violence and examined, and thence to prison. The razor was found hacked and covered with blood; it did not belong to the house, and had most probably produced, in falling, the noise mistaken for the cocking of a pistol.

On our arrival, the depositions of their faithful protector were being taken, he not being expected to live an hour from excess of hæmorrhage. Fortunately, such was not the case; they all slowly recovered.

That man on trial was declared to be *insane;*

the sole proof being, that he had never before committed any similarly violent act. None of his family were subject to insanity; nor had there ever been the slightest approach to it in him, except as manifested by passion and violence. He is still in a lunatic asylum, although perfectly sane — and will, therefore, probably soon be liberated.

Sane or insane, I doubt whether society should be a second time subject to the attacks of such persons. On two separate occasions has the Queen been fired at, and on another Sir Robert Peel's secretary was killed. Thus lives are exposed, one of which would be more valuable than a nation of such fanatics.

Persons committing such acts should, in my opinion, be sent to some penal settlement; where, if properly watched and attended, they would become a warning to others, and be no worse off than here. It is well established, that such acts frequently arise from a morbid desire to obtain notoriety; and as it is very hard to prove where such is or is not the case, this system of punishment would act as a general and wholesome check.

Having an engagement at an early hour

with a nobleman in the neighbourhood, I left the unfortunate scene at eight in the morning.

On the journey, my horse, who had cast a shoe the night before, slipped; I was thrown, broke my collar-bone, and severely bruised my shoulder. This accident kept me six weeks in bed, the bones becoming several times disconnected. Other, and still greater misfortunes of a more domestic nature, fell upon the person who was the indirect cause of all this calamity; and he is now an outcast, shunned and dreaded by all, where he might have lived in the quiet enjoyment of every comfort and independence.

The foregoing circumstances, all occurring within a few hours, will give some idea of the vicissitudes and turmoil of this period. Although, like most engineers, I had hitherto had by no means an inactive life, the Public Works were certainly a more severe and onerous duty than any I ever had to contend with. They could not be otherwise, with any person feeling the amount of responsibility which devolved upon him, and of duties which no agency could accomplish. Even the very lives of his fellow-creatures depended on his keeping the vast and

cumbrous machinery in harmonious motion. It was no uncommon thing to be up and travelling by starlight in the morning, in order to attain some distant point before the men got to work.

On one occasion, after being up from early morning until twelve o'clock at night, attending to office duties, I had then to order my gig in the depth of winter for a journey of eight-and-twenty miles during a severe snow storm. Many besides the poor fell during that dark, despairing year.

There was this one advantage in my being so much out at all hours of the night; that the watchmen on the road-cuttings never knew when they should not expect me. In a county with as heavy public works as any in Ireland, this precaution was doubly necessary; and the result was that no serious accident occurred during the entire year.

On one occasion, passing over the works late, I overheard the following conversation with the very watchman I was looking for; he was snugly ensconced in a forge. "The head engineer was comin along here himself the other mornin, early, and cot Mick Durfy away — he

at onst put another man on, and paid him Mick's wages; so I'd advise you not to be letting your lanthern blow out too often." "What's that, my man?" exclaimed I. The man started round as if electrified. "Och! bedad, your honor, I only ran in this blessed minnit to light my lanthern; it blew out with the gusty night."

CHAP. III.

POSITION OF THE COUNTRY. — ASSASSINATIONS. — PREVENTION. — IMPROVEMENTS SUGGESTED.

THE people are not indolent; of that there has been abundant proof. Give them a definite object, a fair chance of profit, and they will work as well as the people of this or any other country. Of this I have had ample opportunity of judging, on works where thousands have been employed, both here and in Ireland.

In the midst of all her difficulties, Ireland is now perfectly malleable into any shape required by the interests of the sister-isle; but if once permitted to *harden,* evils will arise of a more irremediable nature than we would willingly acknowledge. The people will be for twelve months at least prowling hungry through the country, living by their guns, with which the whole population is armed; and who can estimate the extent to which the system of intimidation and violence may be carried?

Neither should the Irish be considered a

nation of bloodthirsty assassins; the mass of the people have nothing to do with these frequent crimes. It would be just as unreasonable for a foreigner to leave this country with the idea that the English were a cold-blooded, murderous race, because they see each week recorded some acts of crime and murder even amongst families. I admit that the people are too apt to shield the guilty; this arises from a dread of becoming informers: but at the same time I do not think they would assist the murderer in escaping from the hands of justice.

We must look at the facts as they really are. An assassin springs up from the mass of the people, and commits a daring crime. This person is generally a stranger in the country, and belongs to the secret societies that for a hundred years have spread their baneful influence through the kingdom, and which have invariably extended as the people's sufferings, from any cause, have increased. I have been present and witnessed the startled feelings of alarm and horror with which such crimes are received by the mass of the people, the dread of their hourly-increasing influence, and the possibility that even their own dearest relatives might be

soon ensnared in the bands of the midnight assassin.

Their very secrecy of disposition renders their power more formidable, and their discovery more hazardous and uncertain. Two ways of uprooting these societies, — and I doubt if there be any other, — are, first, to listen to and remedy all fair grievances, which they have as much intelligence as any men on earth to perceive. If this is not done, we must only exterminate the entire nation before we effectually cure the evil.

At the same time, those places wherein they delight in bloodshed should be held up as an example to the rest of Ireland. Those plotting assassins, as I have before stated, in nine cases out of ten, are not the really destitute, but bands who trade upon the misfortunes of the poor *: for the rest of Ireland, there is far less crime committed than even in England. Their tranquillity in the midst of such unparalleled

* Since writing the foregoing this fact has been proved, by the *Times* having reported the case of three men, well clad and well fed, taken by the police, with blackened faces, in the act of one robbery, and doubtless employed in many others.

suffering is wonderful; they are waiting, or rather starving, patiently for some measures of relief, necessarily tardy, and oftentimes made more so by an incompetent executive.

Were Ireland, on the contrary, socially remodelled, how would she stand relatively to this country? With her warm-hearted, forgiving, and grateful people, she would form the bulwark of England's power, and the nursery of her army, as this division of the empire is of her navy. Ireland's agriculture would meet England's manufactures, and a thorough mutuality would spring up. Ireland would in fact form a part of England; and proud she well might be of the high connection.

The following may be enumerated as what I consider the most easily effected, and immediately necessary improvements for Ireland: —

1st. The admission of tenant right or improvement clauses.

2d. Estates let out in larger farms or holdings.

3d. Conacre as far as possible prevented.

4th. Greater encouragement to an indus-

trious middle class, in increased holdings based upon the foregoing.

5th. The lower orders to be attached to the establishments of the middle and upper classes more generally as farm labourers.

6th. Religious animosities subdued or extinguished, which the above measures would be amongst the best means of accomplishing.

7th. A general system of land improvement to be commenced.*

8th. Some mode of securing the abundance which Providence offers, for the mere labour, in the seas around Ireland. A proper system once adopted, its value as an accessory in the nation's wealth, for food and export, would scarcely be exceeded by the land itself.

* A road journey from London to Liverpool through Chat Moss and Parr Moss; and from Dublin *via* the Bog or Moss of Allen to Galway, would give a traveller the idea of two nations separated by the lapse of some thousands of years, or at the very Antipodes.

The shortest way of getting the best information, in my opinion, would be as follows:—A commission should at once be appointed to compile a series of simple plans to meet the present difficulties. A committee of practical members of Parliament, with views digested, meeting, not to delay, but to analyse and concentrate their plans, so that in less than a fortnight the Government might decide upon which to adopt, taking more time for the more weighty or doubtful proposals.

9th. The want of gold in the country remedied, by immediately commencing public works — works of land culture, on which the landlord must be the engineer, the Poor-Law Guardians the paymasters, the estates the security, and the crops the reimbursements. *

* See page 127., Agricultural and Monetary Suggestions.

PART IV.

AGRICULTURAL AND MONETARY SUGGESTIONS FOR 1848.

CHAP. I.

APPROACHING CRISIS. — THE ENGLISH LOAN. — PROPOSED LECTURES. — NATIONAL RESOURCES. — MONETARY SUGGESTION. — A NATION IN IDLENESS. — MODE OF REDEMPTION. — INCREASED EMPLOYMENT. — LOSS BY PUBLIC WORKS. — IMMEDIATE REMEDY. — EXISTING DIFFICULTIES. — EMERGENCY. — NECESSITY OF STRONG MEASURES.

We are now on the verge of another famine more terrible than the last, with the additional disadvantage of the utter loss of millions; not, unfortunately, like money spent in railways or ordinary works in this country, by which the wealth, merely changing hands, is still retained in the kingdom.

Now the case is otherwise; the gold has decidedly left us, and we are that much poorer than we were; but there is ample food in the country, and we only require some means of obtaining it for the people. As it is deter-

minedly stated, that the landlords must support their tenantry, let them, at least, have the value of their labour.

The few feeding the many, or the Government supporting a nation of idlers, must soon bring ruin. Persons may write upon and prove what this country owes to Ireland; but they forget that in general might gives right, and possession gives law. It would not have been so very easy to have got 10,000,000*l.* sterling from any other nation upon earth, even if properly due. The most puritanical are not found so ready to meet their liabilities — Pennsylvania for example. The same extent of aid cannot this year be expected; although partial assistance has been promised, it will become a question how such can be awarded, without injuring the English nation to precisely the same extent as the benefit conferred on Ireland.

Vast tracts of land of every character throughout Ireland might be brought into *immediate* and profitable cultivation. Many hundreds of acres that I have seen would, the first year after their improvement, yield a crop to remunerate the outlayer. This at once expresses the fact, that the owners either cannot

provide the capital, or will not take the trouble of cultivating the soil. The surplus unemployed population thus frequently receive from the Government a sum to emigrate, which, if properly applied, would render them an independent and happy peasantry.

Practice is always found to work well with theory. Agricultural lectures have been recently proposed: should these be delivered in Ireland, and attended by demonstrable evidence, success would be immediate.

I should then recommend tracts of rocky, marsh, bog, and other waste lands to be appropriated; that free grants of such lands be given, by the landlords on their estates, or by the Government in convenient parts of the country, to the most competent agriculturists, on condition that it be thorough-drained in the marshes, cleared in the stony uplands, the rocky eminences or inaccessible slopes planted, the free action of the air admitted by cutting low or grubbing up fences; farms centrically situated, the rotation of crops properly considered, and generally the most approved principles of high farming adopted. Thus double the number of men might be employed, instead of, as

at present, entire estates being left for generations untouched by the hand of man: in other words, by substituting to a greater extent annual green crops in lieu of grass, man, as well as the brute creation, will be suffered to exist, and the landowner at the same time, by a little more industry, reap a great deal more profit. All these model farms should be under the superintendence of an officer appointed by the Government.

Ireland requires that something should be immediately done; something practically reproductive, something to protect the people, save the country, and reimburse the Government.

And who will say that this cannot be accomplished, when science has arrived at a point unexampled in the history of mankind, when we have to deal with a frugal, industrious, and grateful people, and a country whose resources are of the most splendid character, with its estuaries, peninsulas, and isthmuses, for the protection of shipping; its harbours, fisheries, and noble rivers, the inlets of commerce and outlets of drainage; its teeming fertility, and, withal, its waste and uncultivated lands?

In one place alone, I have very little doubt

that at least half a million sterling, and probably very much more, could be saved to the Government by a slight improvement, and a principle the development of which we have frequent examples of in other countries.

At a time like the present, when property is daily becoming mortgaged and changing hands, when many landlords have not wherewithal to till their estates, and are allowing them to run into inferior pasture, it would be expedient to raise, on the security of Government, and on that of property, for which property itself should be responsible, a fund in the form of notes, a legal tender. This money should be advanced to those landlords having the desire, but not the means, to cultivate their lands; the Government possessing a lien upon the property, to the amount of this and last year's debt.

Where property is already too much encumbered, there would be no alternative but to allow things to take their course. The improvident must be sacrificed; as in all cases of national and commercial depression.

This fund, in small notes, should be entrusted to the Boards of Guardians, to pay the

labourers on each estate; the landlord superintending the tillage, drainage, or general improvement, according to his own views, aided, when desired, by professional suggestions, and having the control of the men on his own estate; but the payment resting solely with the guardians.

The people will this year be wanting work by thousands — starving in the midst of plenty. It is, therefore, desirable that each barony should employ its own labourers, by the Government requiring each landlord to till a certain proportion of his land, or give other equivalent employment to his own poor. Should they not have funds, the Government to have the power of lending them money as before stated, or of letting the land as a reproductive work by contract to the industrious farmers.

A general and very natural fear is, that alterations may seriously affect existing interests; that whilst benefiting one class, it may injure others; thus, to use a homely expression, robbing Peter to pay Paul. But it must here be remembered that the gold currency is not depreciated in value; every acre of land capable of bearing a mortgage of ten

pounds, would be represented by either ten sovereigns or this note of equal value; the same as it is at present by a good bill or bank note.

The Government will have their taxes as a first claim upon the land; the landlords will by this means have the opportunity of paying these taxes. Land is of no use without culture, as useless as money would be without employment: they have not now the one, and consequently the other is of no use. I do not allude to a landlord in the position of Gilbert Greenhorn, whose lands are mortgaged to the fullest extent; — I mean proprietors whose estates and stock are good security: but even in the case of such an unfortunate, he would still have left one hope, — by putting his shoulder to the wheel, one year's economy and labour might place him again on the high road to independence; the country would have a first claim, and thus could not lose their rates. Unless a man was utterly reckless of his own interests, this would be the result, as the first step would be taken, the payment of the number of labourers with which the estate was chargeable in the proportion of its acreage to the population: they would be paid, and if he did not take

their labour in lieu of rates, his more thrifty neighbours would. Thereby, three times the number of labourers would be employed, with a proportionate increase of yield, and improved lands at the close of 1848.*

The remedy for Ireland should be, according to my opinion, as herein set forth, simple and speedy; and, as far as possible, self-contained, without the least aid being necessary from this country, and avoiding to the utmost any alteration in the working of the present system, or the employment of a complicated machinery — the great perfection of all principles being simplicity.

Much discussion has latterly existed on the question of currency: that I leave in other hands; but it is generally admitted that other property than gold should be represented by a paper currency, and the application of this plan to Ireland for a very short period, would be giving them the utmost shilling of their available resources, and would, in my opinion, be the salvation of the country. The shortest mode of giving the maximum of crop in the

* For the value of which, as a sound basis for future improvements, see page 169.

next year's harvest, so as to admit of a surplus for exportation, — this is what is now and immediately required.

It is the duty of every government to prevent rebellion. I fear with the present prospects of Ireland, little else can be anticipated. Without a wholesome and general system of reproductive employment, such as tilling, sowing, and setting green crops on every acre of land available, and preparing a still greater extent for the future, the country is only on the eve of her troubles.

Something is undoubtedly due to the landlords, to make amends for the unprofitable employment of their tenants during the past year: — they having to pay for their support, it did appear somewhat arbitrary that the tenants should have been employed on the public roads, instead of giving a return in the shape of labour on the estates, the owners themselves superintending.

Any extended combination of staff for a new purpose, is sure to be attended with difficulty and ill success in practice. This would be in a great measure avoided, by the landlords being made the superintendents of all works on their

own estates; they would be much more fit to attend to such improvements, than the majority of those who could be obtained during the late season. They would take care that all their tenantry were assisted in a proportionably equal degree; and that the labour was to the fullest extent bestowed upon the land; and the Union Guardians, as well as the people themselves, would see that all were properly paid.

The following are the kind of queries and replies met with on all sides — I have heard these feelings expressed by all parties from the highest authorities to the poorest peasant.

The Irish people say, "Is it in human nature to expect us to see our families perish of starvation, while the land is teeming with abundance, the result of labour by the sweat of our brow?"

The landlord replies, "I would employ and support you if I could. It is true we have lands that require cropping, improving, and reclaiming; but we cannot do the first, much less the latter: a heavy increase of taxes, and without our income, the rents being unpaid for two or three years. It would be our interest to crop and improve our lands, as much as

yours to work upon them; but how is it to be done? — We cannot even get the money demanded and promised for drainage purposes."

To this the Government rejoin, "Already the artizans and labourers of England are suffering from our sympathy and aid. Our commerce is dying, it has received a blow from which it will, under the most favourable circumstances, take years to recover. The landowners must till and improve their own soils, as in England, and by so doing there is room for the employment of double the population."

Let us suppose for a moment Ireland dissevered from every other country; her inhabitants being in their present state, some with food, but all without funds. The natural course to redeem herself, would be to stop all exports of food, and give an acknowledgment equivalent to gold, on the security of property, for food, seed, and other necessaries.

Let therefore this food be given to the people in lieu of their labour, and in six months export the produce of that labour in lieu of gold. This would pay off all debts, and leave a balance

for extended culture of additional land, reclaimed and improved, so as to give an additional yield in future years.

With the unbounded resources of England, could not this be effected?

In extraordinary emergencies, we must adopt extraordinary remedies. We may, as we did last year, export at a low price, and bring it back at a high price; delay until we are in the midst of the evil, and then give a hurried remedy; allow partial employment and universal starvation: but by being improperly or only half done, it is at best but a patched business, and sowing the seeds of future years of trouble.

Having now before our eyes the experience of last year, we ought certainly to profit by it.

Is it possible that in this age of civilization, and universal charity, an entire people will be permitted to perish, or even to suffer, from a fear of interfering with existing principles?

Such fears are proper in ordinary cases; but when commercial credit was at stake, a bold and successful remedy was applied.

A similar course is now required for Ireland. That strict adherence to, and unwillingness to

depart from established rules, which in ordinary cases may be considered prudent and even commendable, in an extreme emergency, such as the present, would be construed into criminal indifference or neglect.

CHAP. II.

PROPOSAL LAST YEAR TO THE GOVERNMENT. — OBJECTIONS. — ADVANTAGES. — VALUE DEMONSTRATED. — RAILWAYS. — STOPPAGE OF EXPORTS. — POTATO FAILURE.

THE circumstances which brought me into connection with the public works in Ireland were as follows: — Having a proposal for an extended and immediate system of public works, I had an interview with Lord Morpeth on the subject, and was advised by that nobleman to lay it before the Irish Government. I accordingly prepared plans for a Report, and saw Mr. Reddington and Mr. Corry Connellan, private secretary to his Excellency the late Lord Lieutenant. On its being referred to the Commissioners of Public Works, one of that body stated that it would be "obtaining by a side wind, those powers vested in Parliament alone, and that difficulties would exist in obtaining possession of land without an Act of

Parliament." To this I replied, that all new propositions of a general and extended nature must have difficulties; but what landlord, under existing circumstances, would refuse to give or sell, at a moderate price, the small amount of land required, with the prospective advantages to be derived from a railway through his estates, setting on one side the policy of giving employment to a desperate and famishing people? But supposing isolated cases of such a nature to exist, and I doubt if there would be ten such in all Ireland, they should be left to employ their own tenantry, and the other parts of the line proceeded with. Had I known as much of the mode of procedure as I do now, I could have at once replied, that there would have been no difficulty in obtaining land; all that was necessary was, to present a certificate of what the engineer considered the amount of value from damage, trespass, or severance; should the landlord have different views on the subject, he had the alternative of bringing it before the Judge at Assizes.

With respect to the first observation, of obtaining a railway by a side wind, without the authority of Parliament, I held that it would

not be obtaining a railway at all, as it could never become one without the subsequent authority of Parliament: and again, this was not made an objection to tramways and canals, which at any time were convertible, and were frequently converted, into railways.

It was not, in my opinion, the time to hesitate in measures for the welfare of the country; the existing system of public works would be disastrous to all, and any thing of a reproductive character would have been more advisable. However, as it was objected to by the proper authorities, I did not press the subject. I can only now say, that had it been carried into operation, a nucleus of a system of railways would have formed a net-work throughout the kingdom, giving for the time public roads, at any after period convertible into railways, but which, on the plan pursued, can in no one instance be so adopted.

In one instance alone, between the towns of Athlone and Ballinasloe, 10,000*l.* would have been saved to the county and the Government.

The cess-payers were most anxious that a new road should be formed, which I also recommended. The Earl of Clancarty was in

the chair twice, and passed resolutions in favour of the same, particularly as a railway was intended to pass over the same ground, and the shareholders were most anxious that such a course should be adopted, and would willingly have bought the work done. Instead of this, the funds were laid out on the existing road, which, although improved, might very well have remained as it was. The best mail-coach route in England had worse features than existed in that road.

This circumstance will show of what great and permanent value this mode of procedure would in many cases have been. Had it been adopted, the landlords of Ireland would now, instead of being saddled with a heavy debt, be looking forward to the completion of the links in those great chains of communication—the railways of Ireland. Instead of companies struggling onwards in a kind of semi-existence, it is probable that many of these lines would now be progressing towards completion. They would at all events be in so advanced a state, that money could be readily raised upon the amount of work completed, and for completion. It would be a nice question to

ascertain how much could be raised upon the unfinished public works of Ireland at the present moment.

The great advantages of railways in all countries possessing sufficient population, is now an admitted principle; but to a nation undeveloped, like Ireland, they are peculiarly beneficial, as the great high roads between distant points, by which means they are brought into close contiguity: the value of this to Ireland, for the conveyance of fish into the interior of a Catholic country, to feed a hungry people with that food which oftentimes, for the want of such facilities, is cast up and rots upon the coast, must be evident; also for the conveyance of live stock from the interior, from one market or fair to another, in which there is considerable trade, and likewise to the coast for shipment. This would bring the whole of Ireland within a cheaper and shorter journey to this country, and cut off the Continental supplies of so many small articles that could and would be supplied by Ireland, thereby making the country the market-garden of England.

About this time I wrote to the late Lord

Lieutenant, through Mr. Corry Connellan, and had in consequence an interview with him. One or two short extracts from this letter I here subjoin, as it then showed the importance and necessity of what all are now aware of, viz. Government purchases of grain, stopping the exports, and preventing distillation.

"I should recommend that in all works the labourers be paid at least three-fourths in food. This will be doubly advantageous; it will give the people on the spot what they most require, and will enable the Government or their agents to stop the exports, by making vast purchases of grain, which could now be bought, and hereafter sold, at the lowest possible price — the only mode of keeping down the markets, which must otherwise rise to a most ruinous, unattainable, and disastrous price. So convinced am I of the infamy of exporting or distilling grain at this period, that I have myself, since seeing you, purchased as much wheat as will keep six thousand people for three months, which otherwise would have left the country.

"For God's sake, Sir, let a stop be put to this system of exportation. Nineteen-twentieths of the potato crop have perished, upon which

4,000,000 of people have hitherto existed for twelve months, at the average of three pounds and a half per diem.

"Thus we have 14,000,000 or 50,000 barrels × 365 days = 18,250,000 barrels, which, together with that used for cattle and other purposes, would be equal to 30,000,000 of barrels *lost*, and to be supplied from other sources. An average crop of wheat would be ten barrels per acre, and an average crop of potatoes one hundred barrels per acre. Wheat will go twice as far, and with other grain, is about twice as much grown, Thus we have two acres of wheat giving a yield of twenty barrels with three times the sustenance = 60; one acre of potatoes = 100 barrels, or about 16,000,000 barrels short, taking the whole produce of Ireland, from last harvest; much of which has left and is leaving the country."

CHAP. III.

PROPOSAL FOR THE FORMATION OF PUBLIC ROADS, IN SUCH MANNER AS TO BE HEREAFTER CONVERTIBLE INTO RAILWAYS.

THE present proposition is for the purpose of giving public works, and thereby relief within four and twenty hours' notice in any locality which may be pressed by immediate distress; and upon such principle as not only to return immediately the amount of original outlay, but likewise to become an important source of revenue.

It is a well-established fact, that throughout the whole of Ireland, railways and other works may, and eventually will, be carried into execution, involving immense advantages to the community, and likewise to the original investers,—whether the government, the landholders, or the public. Railways are for the most part superseding every known method of international communication, and fast absorbing the

traffic of the canals and turnpike roads; so much is this the case in England, that many of these latter investments do not pay the expenses of wear and tear or repairs. It will thus appear that railways henceforward (or for some time at least) are to become the grand modes of communication and sources of profit throughout the empire. As the Government have long decided upon a principle of non-interference with the construction and management of railways, my attention has been for some time turned to a principle, whereby the existing laws will be adhered to, and at the same time the certainty of advantage hereafter secured, which cannot exist on the principles at present carried out.

It is possible to construct a road or a canal in such manner as hereafter to be applicable to railway communication, as though originally formed for that object alone. I propose, therefore, that in any district requiring public works in Ireland, the supervising engineer shall proceed to the spot, and examine well the position locally between the two nearest towns, or generally as a part of an hereafter more extended line of communication; having fixed

upon his points, he shall proceed directly in the construction of a turnpike road, as though commencing the formation of a railway.

1st. The line of road shall be as direct as possible.

2d. When indirectness is necessary, it shall be accomplished by gradual and easy curves, similar to those upon railways.

3d. Instead of making the ordinary dips and detours into valleys and around hills thereby forming steep and long ascents and routes, the same shall be accomplished by cuttings and embankments, as upon a railway.

4th. The gradients shall be such as to form in the worst part trotting ground, or practically a level for horses, thereby giving what may be considered good working gradients for a locomotive engine.

Thus would be accomplished good and direct turnpike roads, at any time hereafter applicable as a complete line of railway communication.

The plan of payment which I should recommend (but which might be modified hereafter in any way) is as follows: — The Government and electoral divisions to undertake such works, employing the poor of the district in all

the cuttings and embankments, thereby securing priority of right to that district. A company eventually being formed for the construction of a railway, would be necessitated, and would gladly purchase at a high premium such road, or all but complete railway; the landed proprietors, or even the public, might be admitted participators: they would be anxious to avail themselves of so legitimate an investment as an undertaking sanctioned and supported by the Government.

At present, in many parts of Ireland, public works are being proceeded with, which can never produce results equivalent to the outlay; and in many other districts, opportunities exist where the people, who are now in a state of the most abject destitution, as well as open riot, might in less than a week be in full and profitable employment.

With respect to existing railways, I should propose assistance being extended in like manner; the control and management of such loans being wholly under the Government.

One chief advantage of this plan would be its unquestionable popularity; it would accord alike with the interests of the landed pro-

prietary, the railway companies, and the people, and undoubtedly be successful for the Government. A splendid opportunity exists in collecting matter from the projects of the numberless defunct companies, and lines abandoned, alone for want of capital.

This proposal was made last year, but it is even now not too late for its adoption. It is, however, necessary to commence immediately works as for a railway, executing only the heavier embankments and cuttings.

It is now an admitted fact, that wherever a road, however obscure, exists, there a railway will pay for construction; with this one proviso, that it shall be in the line of important termini, however distant from each other; and no country in Europe possesses facilities for their construction equal to Ireland, from her advantages in Ordnance Surveys, Commissioners' Report, and other Railway Surveys.

PART V.

HARBOURS AND COAST PROTECTION.

CHAP. I.

COASTS UNPROTECTED. — COMMITTEE ON IMPROVEMENTS. — INVENTIONS. — SACRIFICE OF LIFE AND PROPERTY. — DESCRIPTION OF MOORING. — OPERATION. — DEMONSTRATION.

In the present day, from the advancement of scientific improvements, entire armies may be transmitted from any part of the Continent to the shores of England; and then the entire British coast is open; they may almost choose their own county. Unlike the period but just passed, when large fleets were compelled to remain for weeks with an in-shore wind, or wind-bound; at the present day, a foreign steam navy can at any time, from any point, and, indeed, almost in any weather, reach this coast; although watched, they may escape under cover of the night; or, from different quarters,

when our fleets were remote or scattered, they might, by preconcerted arrangement, steam for any particular point or undefended town, such as Brighton, and then at midnight burn it to the ground. And what is their defence? No harbour, and three guns, if I remember right. Where would the Pavilion be in the morning? All unfortified coast towns will undoubtedly be in a very precarious position at the present day in case of war. In two hours the most insignificant force might set them on fire, and escape. The coast railways are the most valuable checks upon all this, with their main arteries, at intervals, running into the interior; but, undoubtedly, something more is required—a protection is necessary for ships of all powers in rough weather.

I am now bringing forward a plan that I believe will remedy many of these defects, not only as applicable to harbours, but likewise to the shores on the coast. I am supported by many high and competent naval and scientific persons. There is much required some able tribunal of scientific and practical men, to inquire into the merits of all plans, and try those which appear to be practicable. Engineers to whom

plans are submitted rarely give a definite opinion, unless the thing is sure to fail, for fear of injuring their reputation.

A Committee of Five Engineers; Naval, Royal, Civil, Mechanical, Geological, Mineralogical, and Mining, might be so constituted as to pay themselves by examining all inventions sent before the Government, and thus avoid occupying the time of high official personages. Although myself a sufferer, I am not surprised at these latter evading all suggested improvements: some projects that professional men would at once throw on one side, are submitted to them. When a plan has occupied many years of a professional man's time, at a period when others were realising large fortunes, — it is rather dispiriting to be told by the Government, that it must be first proved by the commercial world; and on the other hand, by the leading men of the day, that harbours could bring them no profit; they related alone to the Government. This may be an idea as Utopian as many others; but it has not been proved, and is not considered so; indeed, no scientific or practical man who has seen it, has pronounced unfavourably upon it, generally quite the re-

verse; I therefore claim the benefit of the doubt.

There are, I have not the least doubt, at this moment, many valuable inventions, literally and figuratively shelved in the archives of the Enrolment Office, that, if brought out fairly, or tested, would repay the Government one hundred-fold for the expenses they might venture into; and the trial, I think, is due to a country that has achieved so much in the science of engineering. In the first place, the public are not the best judges of what is valuable, and thus, in the majority of cases, take up impracticable schemes. Secondly, the inventor is probably not rich enough to test a matter of national magnitude and importance. Where tested, proved, and found to answer, the commission should have a part payment from the profits, the same as, or rather less than, an inventor would be glad to award a private individual. All patents should likewise be reduced in the cost;—say, let the privy seal be considered a patent right, with three or five years to obtain the great seal, as usual, six months after such patent. The Government requiring 100*l.* for securing to a man his idea,

good or bad, is like playing the dextrous juggler's trick — heads, I win; harps, you lose.

The immense sacrifice of property occurring annually on our coasts, as well as the awful destruction of human life, caused by the want of harbours safe and easy of access, is a subject that both in a humane and a commercial point of view demands the most attentive consideration. Not only have we frequently to deplore the loss of the splendid Indiaman, when in sight of home, with a cargo of sufficient value to purchase protection (upon the principle here submitted) for many harbours and a vast extent of coast; the destruction of entire fleets of fishing craft, with their unprotected and hardy crews; but likewise numberless minor evils, such as the drifting, straining, or stranding of vessels, loss of masts, spars, nets, sails and cables, and many other casualties arising from the same source.

The object of this invention is to afford protection to shipping under any circumstances of weather, in the most dangerous or insecure locality, and in the ordinary track of vessels,

without subjecting them to the danger and risk of missing a lee-shore harbour.

This national object can be accomplished by mechanical means of such simplicity, correctness, and durability of principle, as must be obvious to all — even those least acquainted with mechanical and nautical subjects.

It is proposed to attach a block of iron, of about five tons, with a length of chain equal to the depth of water, to a mooring anchor or screw pile; from the block will arise a chain to the surface of the water, supported by a buoy. At intervals of fifty fathoms will be placed other similar piles, blocks, and buoys. Between every two of these buoys, twenty-five feet below, and parallel with the surface of the water, will be fixed a chain or wire rope running through a jointed beam of timber. These moorings will be distinctly visible, and generally placed in the locality of a light-house or light-vessel, as a floating caissoon to form smooth water, with a gangway for vessels taking in provisions or coals. This caissoon, which is the projector's patent, has been tried, and is found perfectly to answer the required

purpose, viz. freedom from heavy motion, with smooth water to leeward.

A vessel intending to avail herself of this anchorage, either drifting or running in, will let go her anchor before she gets between the buoys, which will necessarily catch the cross-booms, and slide to the joint or lock in the centre, whatever part of the boom it first comes in contact with, and will then be secured by the joint or lock, which is so constructed as to hold fast until it is hove up for the purpose of getting the anchor, which will be very easily effected, as the cross piece will float lightly up to the bows as the cable is hove in; the cat is then hooked, and the cross-pieces hauled clear by a slip rope, if necessary. In the ordinary mode of mooring, a ship receives the dead shock of the wave (as a rock or fixed body) in front of and under her bows; these mooring blocks, on the contrary, will admit of perfect freedom in rising and drifting with the waves, the advantages of which will be obvious to practical seamen, and not much less so to other parties. The winds and waves being not continuous, but intermitting, if a ship possess the faculty of yielding to the stroke of the sea or the blast of

the gale, and resuming her position again as its strength passes by, she will necessarily do so without sustaining injury.

Since the days of Dibdin it has passed into a proverb, that a tight ship and good sea-room imply perfect safety, or, in other words, that the sea has no power of injuring a vessel so long as she can yield to its shock. Thus a ship, an empty cask, or the most fragile body, may drift at sea in a gale with safety: and this principle of nature is here adopted; the vessel having, without any possibility of strain or shock, a perfect freedom of play to any extent to which she may be driven before the wave, with the advantage of being drawn back when in the trough of the sea preparatory to the next wave. These yielding moorings are adapted either for harbours or open roadsteads, or in any situation where danger to shipping exists; they are peculiarly advantageous in bad holding ground, as the moorings, being fixed, admit of the screw pile, the mushroom anchor, or other plans of perfect security in any bottom.

When once the principle is found to succeed, its uses will doubtless become more extended:

for instance, attached to floating landing platforms in front of piers, and sea quays, as at Brighton, where at present it is found impossible to effect the embarkation or debarkation of goods or passengers in rough weather. It will be extensively adopted for ground moorings by harbour corporations, as an additional and inner protection; likewise at the narrow entrances to small harbours; (by the evidence given in the House of Commons it is shown that many vessels remain at sea during a gale of wind, with the chance of foundering, in preference to running for harbours with the possibility of missing the entrance; by placing these moorings, running out at an angle of 45 degrees from each pier head, this would be remedied;) for light vessels and buoys, allowing them to ride over the wave; (the buoys being at times buried in the sea, frequently causing the loss of vessels;) and in various other ways effective.

When we consider the effect of a single gale of wind, the number of shipwrecks and deplorable loss of human life, the cost of these improved harbours around our coast would be unworthy of consideration. This principle will

be of great utility to the corporations of such harbours as Kingstown, where, in one night, seven vessels were totally wrecked.

The vast commercial advantages of these moorings must be apparent, if proved to have that yielding quality, which, it is here contended, will enable vessels to outride the most severe storm in perfect safety. Already several of the most eminent scientific and naval authorities have inspected the plan, and pronounced it invaluable as a National Marine Protection.

ADVANTAGES OF PROPOSED OVER OTHER PLANS.

Proposed Protection.

The total cost of the same extent of security would not equal the annual interest of the amount expended in a Stone Harbour. This plan may be universally applied, and become a source of

Stone Protection.

The great cost of stone harbours makes each one become a matter of serious parliamentary inquiry, and every point around the intended locality become petitioners, showing what they

Proposed Protection.	*Stone Protection.*
vast revenue to the state by an entrance-toll on ships in distress.	look upon as superior advantages.
It may be laid down in any depth of anchorage: thus, in mid-channel, or on the fishing banks, avoiding the imminent danger to ships or boats of running into a lee shore.	A stone harbour increases in cost in the square of the depth. Thus the deeper and more valuable, as an anchorage, the more objectionable from the enormous outlay required.
It cannot silt up, and may be removed to any other locality at little cost.	Almost all stone harbours encourage bars. Many existing instances could be adduced of harbours thus rendered useless or available only at an enormous cost.
It may be laid down with equal advantage in the worst anchorages, the Goodwin	Harbours of stone can only be formed in the most perfect anchorages, and in a stone

Proposed Protection.	*Stone Protection.*
Sands, if necessary, and in the most open situations, in front of exposed port-towns, sea-wall, or even on an iron-bound coast.	country. Thus, from an accidental or natural defect, the most valuable sites are neglected, and important towns suffered to decay.
The most perfect safety would be such a state of the coast, that a vessel taken in a storm in any locality would have some harbour, either natural or artificial, to run for. This, floating harbours, from their trifling expense, might easily accomplish; thus ensuring the salvation of lives and valuable property to a vast amount annually.	This stone harbours could never accomplish, on account of the enormous increase of outlay required, and owing to the great extent of seaward angle. Nature forms all stone breast-works nearly vertical, as at Bray.* See Preface.

* These cliffs Nature has formed vertically, as the angle of greatest resistance for a stone bulwark against

the fury of the storm. This principle does not appear to have been appreciated by engineers. The Plymouth breakwater was formed of three times the necessary material, and then, with its gradual slope, became an incline, up and over which stones of eight and ten tons were at times washed by the violence of the waves; and vast gaps were, in consequence, made in some places.

Softer materials, on the contrary, require increased slopes, or seaward angles, in an inverse ratio to their densities; and there is no more interesting study than the angles formed in rough weather by the sea in its breaches in shingle, sand, and other materials.

CHAP. II.

FISHERIES. — GOVERNMENT SUPERVISION. — DANGERS AND PROTECTION. — NATIONAL LOSS.

ONE of the most valuable, and certainly the most economical, of all means of accumulating food and wealth, and promoting industry,— is by the Fisheries. One hundredth part of the amount spent on Ireland last year would have tended greatly to relieve the distress of the entire kingdom. But how could the Government see modes of unravelling and simplifying apparently complicated engineering systems? This only further proves the necessity of some responsible body, such as I name at page 152., to analyse, compare the cost of working and advantages, and report upon them. In an emergency, such a body could always be counted upon. "In the multitude of counsel there is wisdom." The want of some competent and responsible head cost the nation heavily this year.

Persons have not been in the habit of undertaking fishery projects, and I doubt if private companies will be found at first, to any great extent, to embark in what appears to them so very uncertain a speculation. It would be most beneficial if the Government were to set the example, and give one or two companies an immediate start, or undertake to guarantee five per cent. for a certain period, as a parent railway company frequently does; retaining their supreme power in the management, so that the remedy of all abuses or necessary alterations could be at once effected, a non-attention to which causes the failure of many good private companies. I doubt not that if some good and speedy plan were adopted, at a slight expense, a foundation-stone to Ireland's future prosperity would be laid.

Manifold and serious are the evils arising from the want of frequent and accessible asylum harbours for fishing craft.

Those least acquainted with nautical matters can readily conceive the despair of fishermen, who are compelled to run on shore with their freight, during a storm, on even the most favourable coast. The craft are unavoidably

beached; their bottoms stove in; and not unfrequently both crew and vessel lost within a a few yards of their homes; and often have the families to deplore the double loss of the vessel by which they obtained a subsistence, and the parents themselves.

The consequence is, that only small boats can be employed, and these again are afraid to put to sea in stormy or doubtful weather. The loss of one fishing-vessel or crew likewise deters many from embarking in the same hazardous occupation. Daily we read accounts in the papers of the neglect of the fishermen of the coast of Ireland, in not putting out at periods when the seas are teeming with abundance. But ask the Arran fishermen if they would not venture, had they a haven perfectly secure in all weathers? Undoubtedly such would be the case, and many poor families find food and employment. The sea is no preserve, it is open to all.

No fishery can be considered perfect without a safety anchorage, or a good and accessible harbour; and its value increases in proportion to its proximity to either one or the other. Consequently, these moorings might with ad-

vantage be laid down at all fishing grounds; where one storm generally does more harm in the loss of vessels, spars, sails, and other gear, than the entire profits of the year can adequately compensate. £10,000 would not cover the injury done this year to the fisheries in one part of Scotland by the fury of the elements.

The harvest of the soil, though its labourers or owners may change, is sure to be garnered in; unlike that of the ocean, where *the loss of each vessel and each fisherman, and consequently of the amount they produce from an otherwise profitless source, is so much lost of the nation's wealth.*

Deeply to be lamented is the continual loss of our hardy men engaged in the "deep sea fisheries," the true "cradle of the British navy," and of the vast revenue, which, by proper management and adaptation of scientific means, might be derived from that boundless source of wealth, the ocean.

PART VI.

A FEW HINTS TO ENGLISH AND IRISH LANDHOLDERS FOR THE FORTHCOMING YEAR.

CHAP. I.

MODE OF REMUNERATION. — SIMPLICITY OF DRAINAGE. — BOG DRAINS AND ROADS. — CLEARING OF STONES. — EMPLOYMENT FOR YOUNG AND AGED. — BARROWS. — WASTE UPLANDS. — IMPROVEMENT. — IRRIGATION. — MILL-SITES. — CANALS.

THERE can be no doubt from present appearances that we are approaching a crisis still more to be dreaded than that of last year? The people cannot be permitted to starve; neither is it right that property should be stolen night after night, and lives constantly endangered. But desperate men will commit desperate acts.

I would beg leave to offer for consideration, plans that may be almost universally acted upon; and will have the effect of making disturbed districts more peaceable.

I should recommend immediate employment

to the fullest extent by the following method. Should proprietors not have funds, or stock, or grain, or potatoes, or some other exchangeable commodity to give in return for labour, I would advise a very common commercial expedient; namely, to award to them a certain share of the crop, free of all charge, and which they may be at liberty to hold, or to transfer, standing, to the highest bidder; in all cases giving such proprietor the refusal. Nothing is more common in the manufacturing districts, especially in some trades, than for a certain quantity of the raw material to be given out to parties, who perfect it, and return it to their employers; and a certain portion of which they receive in return for their labour.

Now for the description of labour. In passing through the majority of Irish estates, you are at once and forcibly struck with the absence of that science and *cleanliness*, if I may use the term, so conspicuous in English farming; and it is in remedying such defects that I would advise the owners to employ their tenantry.

Firstly, in *cropping*, as it will be at once a means of barter. Agree to give so much of

what is done for so much continued labour; then mark out after completion the part of the field that the party, shall have, — at, say, a penny per rood, to make the transaction legal and above question. Then set him to other employments; for instance, cutting down fences, grubbing up useless trees and bushes, which impede the free and healthy action of the air, particularly on the sides in the direction of the mildest temperature. Open well all ditches; and let the water as much as possible off the cold and wet lands, and dam it back where there is a tendency to over-drought.

On one occasion a friend was amused at me for interfering with his farming. Some of his lands were very wet; and I at once perceived that the natural outfall was nearly on a dead level; yet were the drains choked up with weeds and mud. I ordered a few men, and with rakes and shovels had them cleared. He was not aware of my proceedings, until, in a few days, on going out, after I had cleared away the end dam, where there was an abrupt fall or shallow, he found not only his fields but the very pond in his farm-yard drained. This saved his liquid manure, which used to run

entirely to waste in it. It was all the land wanted, and he had been anxiously consulting me about applying to straighten, improve, and thorough-drain his lands. Doubtless, thorough-draining would have done more; but not to any considerable extent, as it was already a free porous soil. A good natural outfall to the nearest brooks or rivers, is always advisable for drainage. Sluggish streams must be cut more deep and broad. They must, indeed, be good lands that drainage would not improve.

A favourite theory of the present day is, that currents of electricity traverse the earth in a particular direction, so that even the direction in which people sleep, and in which the beds are placed, should be matter of importance. With the first of these doctrines I perfectly agree, but cannot subscribe to the second; otherwise, strange beds, improperly situated, would be very uncomfortable places of repose to all, as they certainly are to some. I should say, that such electrical influences would be much more likely to operate upon turnip-beds and upon land crops generally.

It certainly is of importance, in ploughing ridges, to allow them, as far as possible, to run

opposite the direction of the most severe winds: the rising tides effectually break up the even current, and therefore the force of the wind; and whilst these ridges are being made, they should be ploughed into as great a curve as possible, by which means at least one third additional land can be obtained. I have now proved this principle to be correct: at first it was stated that it would interfere with the scythe, and only allow of as much grass as a level as it would grow perpendicularly, or in the direction and length of the base. Such is certainly not the result in practice: by passing the gutter along the length of the furrow this is avoided; and secondly, in growth the grass is found to spring up as close as on a level, and in a nearly right angle to the slope, instead of perpendicularly.

With regard to *bog culture*, of the first importance is a road and drain, however narrow, in the direction of the outfall. In my opinion, mistakes have hitherto been made in going to work too quickly, and at the wrong time. With the black or red turf bog there is not so much difficulty; but with the spongy or growing bog, I should say, commence road

drains first, working in the driest summer weather. Cut the soling of bog heath or turf from the drains, and leave both to dry and consolidate together. Then open the drains again, lay down a soling, and cover all with a six-inch coating of bog marl or gravel. I should recommend the main drains being from 400 to 600 feet apart; and *one* drain, not *two*, and sometimes *four* parallel ones, as I have seen, be employed to drain the road, one being amply sufficient for the drainage of the intermediate waters. This should be on the highest side, or in the direction of the fall. Six hundred feet in breadth will effectually drain twice six hundred feet, ready for reclamation. Working at the drains repeatedly, or during wet weather, is of no use; they will close up, and in a week leave scarce a vestige of the labour. In one locality, in making a new road, I heard there was no gravel or marl within two miles. Having no boring rods, I had a long pole driven into all the neighbouring drains, and found gravel within three yards of our feet. Such a thing had never been heard of in the memory of "the oldest inhabitant;" it would have saved them, as it did us, 300 per cent in carriage.

I should next recommend *clearing of large stones.* I have heard reputed good agriculturists say that they are valuable as manure, and a sign of good land; but wherever the larger ones exist naturally, there are always plenty of smaller ones, of the size of pebbles, to serve the same purpose. By being strewn over and covering the land to the extent of their united bulk, they injure, and in some cases almost exclude, the crop; besides which, the annual abrasion or debris of even a ton of large hard limestones would be so trifling, that the ploughman could put it in his pocket. If it is so necessary, get it in its proper pulverized form.

All lands should be cleared of stones or weeds; where the soil is stiff, tough, or in clods, it should be broken with beaters — this will give plenty of cheap light work for children, many hundreds of whom, in England, are employed at it; and well such little things pay in the superior yield of crops. The stones so gathered can be laid on one side for drains, or placed on the by-road or farm-road in ruts. There is no greater economy to a farmer than good roads, for the carriage of crops and ma-

nures, and marketable commodities; and no worse farm-roads in the world than in Ireland. One horse on a good road will work and wear out three straining themselves on bad ones.* The poor and sickly, whom the landlord or the union considered unfit to labour, might have relief in the usual way. But there are few, as before said, who may not be of some use, either in gathering stones for drains, weeding, breaking up and pulverising the earth for sowing, and otherwise aiding the farm labourers, and thereby assisting the landowner to the best of their ability.

Even the most enfeebled or incapable of out-door labour may be employed; as, for instance, in stone-breaking, or, at their own cottages, in the construction, which nearly all the rural population understand, of kishes or wicker-baskets. These might be made with handles similar to the mason's hand-barrow, for the carriage of stones or bog-turf, and likewise as wheel-barrows, which might thus be more cheaply constructed than those ordinarily in use; and would at the same time be lighter and equally strong.

* See calculation, page 205.

These I have had made, and used with great advantage; and by bringing the wheel more into the middle, the centre of gravity will be thrown off the hands, and upon it, whereby at least double the load can be carried by the weak and enfeebled.

Many such occupations might be introduced, enabling both young and old to avoid the demoralising influence of complete pauperism. Hundreds of instances have come under my notice, where old men and women of eighty have preferred road-making in wet bogs, to eating the bread of idleness, or the risk of relief in the much-dreaded and pernicious union workhouse.

There are many parts of even dry lands, that here and there show dark green, rank, or rush-grown patches; denoting the presence of damp. A trench cut from them, to the lowest side of the field-ditch, filled with stones and covered over, would in one year pay 200 per cent on the outlay.

In bog or heath and mountainous lands, as around Dublin, for instance, at Howth, the surface should be burnt to carbon (see p. 36.), and mixed with marl, found in the district in great

abundance, and also with seaweed, — a most valuable manure when sufficiently near. In order to reduce the cost of carriage at least a hundred-fold, I should lay down a tram-way to the bottom, or other necessary locality, and by an endless chain convey materials to the top of the hill, allowing the descent by gravitation of the stone cleared from its surface, and for which clearance, the saving in steam or horse-power would pay well; thus at a cheaper rate than if a level plain, might such apparently inaccessible hills be reclaimed. This applies also to the Dublin mountains, with this difference, that turf could be sent into Dublin constantly, and for half the cost, carrying up in return all necessary commodities to the mountains.

The uplands should be cleared of furze and rock; or, if too rocky, planted upon. There are no lands on earth so good that they may may not be improved. Where there are unreclaimed lands, apply for a grant and commence drainages; the upland or field drainage in the winter; and subsequently, in summer, the main outfall. Where brooks or streams run through the land, let them be narrowed, deepened, and shortened, by which means a more

rapid outfall is obtained, and the run of the general land waters, particularly of the minor drains, encouraged. By this means, likewise, land is saved.

The efforts of nature tend always to straighten, and thereby shorten, the course of a stream; as evidenced by the abrasion of the convex banks, and all impediments tending to curve the river.

All rivers would naturally run in a straight line, did not irregularities of land first cause a diversion; and it is for man to work with and aid Nature, as far as possible, in her efforts. By a careful and minute investigation, all that is required may readily be ascertained.

For instance, in the formation of earth in bogs, and spontaneous growth of vegetation as above, how are we to account for vegetation existing of a superior character, or indeed existing at all, there? It arises from irrigation. Carry that same principle of irrigation further over the same lands, where such can be accomplished by the damming back or diverting the natural flow of the waters, and proportionate results will be obtained. During floods, especially when the water is turgid, it comes

down laden with rich diluvial matter; and by having the sluices ready, the lands may be covered to any depth. A lodgment of fine impalpable powder manure will take place, and the lands be most sensibly benefited. After standing until the water has precipitated and become clear, the process must be repeated as often as necessary.

In the drainage of powerful streams, with a constant flow winter and summer, great care should be taken; as the imprudent cutting away of some shallow or ford might destroy a valuable mill site, of which many will most likely henceforward be required in the country; and which, by the outlay of a small sum, would give a considerable income. Besides, the natural fall of the stream will be amply sufficient; and should lands be too dry in their nature, it will be well to have the power of damming back the water, as required for irrigation: but when lands want draining as much as in most cases, cut away the shallows of all small brooks or rills, and otherwise useless streams, as they unnecessarily pen the water back upon the lands. Damp in a retentive

soil is a complete poison to any but the coarsest weeds.

The long levels of the larger streams might well be rendered navigable, if only for the local purposes of carriage of manure, and other heavy weights, and would save a large agriculturist some hundreds a year. In a great length of carriage, as upon the Shannon, the more tributary canals that are made for communication with large towns, the better. It is to me matter of surprise, that this mode of transit should be so much neglected. It may possibly arise from the fact, that the saving would be so insensibly effected, that they cannot exactly see the advantage, and that with some it might entail the coast of a boat. To show the calculation of this difference, see p. 207.

CHAP. II.

AGRICULTURAL SCIENCE. — THREE-FOLD EMPLOYMENT. — "BOARDED" CATTLE. — MANURES. — DEEP DRAINAGE. — TOP-DRESSING. — MEETING AT SIR ROBERT PEEL'S. — THIN SOWING. — SALTING MANURE AND CROPS. — LIQUID MANURE. — MANURE CONDUITS.

THE science of agriculture is at least half a century behind mechanical or manufacturing science. Even in England and Scotland, great improvements are only just beginning to be made; the implements, for the most part, are of an inferior construction, and the whole system generally has derived very little aid from engineering or scientific appliances. To the landlords of Ireland especially, a correct system of agriculture is of the most vital consequence. Their estates were encumbered by their forefathers in the good old days of true Irish hospitality, when even a very moderate attention to worldly matters would have sufficed to make all ends meet; at a period when the country was neither overburdened with people nor with

taxes, there was no need to study new agricultural implements for the increased economy of labour,—for superseding the employment of the husbandman rather than reducing his toil. All improvements are with the view of giving greater abundance at less outlay, and thus increasing the means of keeping an increasing population; but, unfortunately, such developments only benefit a few, and Great Britain every day more assumes the character of a vast depôt for mechanical improvements and steam engines than that of an accessory in the employment of manual labour upon the earth.

A few of the most recent and approved alterations adopted by the first Scotch and English agriculturists may be usefully stated, as proving with what advantage even the most cherished old pastures may be cut up altogether. For instance, that which was once dairy land, by being cut up and brought into tillage, has in many cases given constant employment to three times the number of labourers, three times the number of cattle, a proportional increase in pigs and fat sheep, and from fifteen to twenty fold the amount of wheat on the estates. Cattle and sheep are likewise kept on boards,

instead of straw; which latter is an expense, and entails a constant and peculiar crop to provide. These boards are framed open, to admit the free passage of manure, which is then gathered and retained, the solids and liquids separately by some, by others mixed. I should say that both plans are useful in different cases: as on grass, and such other lands, liquid manure can be best applied; and for cropping, the heavier manure can be adopted with advantage. I do not agree with those who say that the carriage of so much straw is so much waste, as the plants cannot absorb other than a liquid. That is very true; but liquids on tillage lands are apt to evaporate before they can be all absorbed by the crops, which have thus a superabundance at one period, and a scant supply at another. The solid or stable manures retain their moisture as well in the land as in the farm-yard; and in time rotting, tend to increase the depth and quality of the soil. Were they not made use of, five per cent of the manures having been absorbed, would be lost with them. This all appear to agree upon, that water should be studiously prevented from mixing with the manures to be carted; firstly, as weakening

them; and secondly, as causing manifold more expense in the carriage. Besides, I may add, that the soft rain is the proper, natural, and least expensive dilution.

Drainage all agriculturists know to be of the first importance, nay, even necessity. It is no uncommon thing for even tenants without leases to undertake deep drainage; the main point is, to have an understanding that all improvements shall be valued and paid for by the in-coming tenant. Mr. Parks' system is now generally considered the best and cheapest.

He employs small pipes placed in parallel trenches, about five feet deep, thus getting well under the land, and carrying away the bottom waters. Such improvement, even to marshy grounds, will reimburse the farmer in a first year's crop: lands, before not worth three or five shillings per acre, become better worth *5l.* Paying for undrained lands, at however low a rate, is a very expensive system, and is what often ruins the poor Irish tenant. It is imperative that some act should be passed, giving the same power to the farmer, of selling his improvements, that a shopkeeper has of selling his fixtures to the incoming tenant.

Small holdings can never succeed. Farms should be sufficiently large to supply varied crops, for sale and home consumption, requiring constant labourers; and to pay for the continued maintenance of horses and cattle, in sufficient numbers to provide ample manure without purchasing; a very common, but a very costly expedient in England. Sometimes this is necessary from the failure of particular crops, and the good farmer will not be without manure at whatever cost, as he knows full well, that what is taken away from the soil must be as honestly and constantly repaid, or the want of crops will soon betray the injustice. However, buying manure is at best an expensive resource; not only have you to pay for it as it lies, but likewise for the enormous cost of carriage, even with your own horses. For calculation of this increased expense, see page 204.

Top-dressing is very valuable to improve the surface after drainage, and one of the best top-dressings, where convenient, is burnt clay; its effects will be at once evident: first, by the soil being more easily worked, and at much less cost; and, secondly, by about five-fold the wheat crop being produced after the first year.

Marsh land, when reclaimed, is often the best possible, owing, in a great degree, to its always being sufficiently moist, and never too much so. Other lands, even the very best, are liable to be burnt up in hot weather, showing the necessity of not over-draining, and allowing the power of irrigating or damming the waters back when required.

This system of thorough drainage is not improved by the use of burnt clay, but it admits of being trodden down by sheep, or, what is still better for the farmer, by men, women, or children, to consolidate the wheat-crop. I say *better,* as it can then be done more effectually, and not cost one shilling per acre; it likewise expels the slug and the wire worm.

Since writing the above, I find some of these facts were fully borne out, varying only in a few minor particulars, at the Scientific Agricultural Meeting at Sir Robert Peel's; the very differences of opinion tended, upon analysis, to confirm the truth of general principles; and the most valuable information, relative to crops, cattle, and agricultural implements, was brought forward. Gentlemen, coming from opposite sides of the kingdom, found their systems, like

mathematics, however different in the *modus operandi,* all proving the correctness of the great theories set forth. It was a digest of all hitherto discovered improvements in agricultural science, and it would be well worth the agriculturist's while to obtain a copy of the report of that most interesting meeting at the house of the high-minded individual who is so great and unostentatious a patron of the arts and sciences.

Mr. Mechi very ably described his principles of farming; some of which are too concise, and too valuable to be here omitted. "With regard to the quantity of seed, his experiments (conducted now for three years, and publicly recorded) had uniformly been in favour of thin sowing, say from four to five pecks of wheat, and six to seven pecks of barley and oats. Some of the best farmers in this neighbourhood adopted this system successfully. It was highly important, in a national point of view, that this question should be settled. For if the quantities he had named were available, adieu at once to the necessity for foreign imports. It appeared to be admitted on all hands, that if a bushel of wheat vegetated, it was an ample

seeding, and it was reasonable that it should be so, because if each good kernel produced only one ear, containing forty-eight kernels (and that was not a large one), there was no allowance for increase by branching or tillering, which we knew would take place to a considerable extent in well-farmed land containing an abundance of organic matter. Thin sowing delayed the ripening three or four days —consolidation by pressure prevented the development of wireworm and slug. He had found salt tended to a similar result. He salted all his wheats, at the rate of four to eight bushels per acre, and was determined to use much more. He knew a gentleman in Northamptonshire, whose wheat-crops could scarcely ever be kept from going down, until he used salt, which had effectually kept it standing. He (Mr. M.) salted the manure in his yards. He found that it sweetened them; he supposed it fixed the ammonia. It was a singular fact, that whilst salt tended to preserve animal substances, it, on the contrary, rapidly decomposed vegetable matter. It was a cheap alkali of native production, costing only about twenty to thirty shillings per ton;

whilst all other alkalis were nearly eight times as dear. He strongly recommended the abundant use of bones, with and without acid, for root and green crops. It was evident that the bones formed in our growing animals, and in our cows, from the produce of the farm, cost us five-pence per pound, or forty-five pounds per ton. Now, if we could replace these, as we can do by bone-dust, at seven pounds per ton, it was clearly good policy to use them. He considered the waste of the liquid portions of the manure, in most farm-yards, a great national calamity. It was a great mistake ever to allow water to fall on manure. Water was a very heavy article. A thousand gallons weighed 10,000 lbs., and were expensive to cart. He had heard farmers say, when rain was falling, that they should then litter their yards and make manure! Straw and water, in fact! He found in practice that animals did well on their own excrements and straw under cover; that they consolidated the mass until it was four feet thick, when it would cut out like a good dung-heap, and be fit to carry on the land. But if rain-water were allowed to wash this mass, an injurious effect resulted both to

the animal and to the manure. He could not afford to allow his manure to be well washed in the yards by drainage from the buildings, and afterwards to be washed, dried, and mangled, by putting it out in heaps and turning over. It was a waste of time and money. He found that his crops grew better with unwashed manure. A farm-yard should be like a railway terminus, covered in, but amply ventilated," &c.

The Rev. A. Huxtable stated, that he conveyed his liquid manures by the use of elm pipes sunk in the ground, and running, when necessary, through his farm, with upright discharging pipes, having nozzles at every 100 yards. A force pump at the receiving tank drove the manure through the drains with considerable force, when required. Then one of the nozzles is removed and hose inserted, capable of making a circuit of forty yards, and throwing a light jet of most valuable manures regularly over all the lands. This could be increased *ad libitum* by attaching extra lengths of hose, which costs 1*s.* per yard. The advantage of this plan is, that liquid manure may be mixed with water, and carried without extra

cost; the amount of dilution depending upon the evaporating powers of the atmosphere. "By this means," continued the reverend gentleman, "forty acres of land can be constantly irrigated by a primary outlay of 30*l*."

CHAP. III.

THE POTATO. — ITS PRECARIOUS NATURE. — ECONOMY OF LABOUR. — A MAN WORTH HIS SUSTENANCE. — THE IRISH LABOURER. — WANT OF NUTRIMENT. — EXTRAVAGANCE OF LOW DIET.

BEFORE closing this paper, it is my desire to show the unwholesome nature, if not unprofitableness, of exclusive or too great a preponderance of vegetable diet, particularly the potato. It is, in my opinion, dear in the end, however cheaply purchased; making men independent with too little labour. Probably the absurd but characteristic expression, —

> " The sweetest divarshin that's under the sun,
> Is to sit by the fire till the praties are done,"

may be shown, as follows, to arise from other causes than laziness; in short, from an habitual lassitude, caused by the want of sufficient nourishment.

The potato, as an article of produce, will, in

future years, be of a very, to say the least, speculative character. The disease appears to have engrafted itself on that vegetable as a peculiarity, which, under any unfavourable circumstances of atmosphere, may break out, bringing a recurrence of the fearful national calamities,—poverty, disease, and famine. The dependency upon any single article of produce as a national food, is both unwholesome and uncertain and speculative; when a blight occurs in crops, it is generally confined to one description; the loss is then divided amongst the others, when its effects are trivial or imperceptible; but with one article alone, or as the great proportion, the consequences are most disastrous, and ruin is very likely to follow, as many have experienced, who, two or three years ago, had little reason to anticipate such a circumstance from so apparently unimportant a cause. As an article of husbandry or commerce, the imprudence of depending upon the potato alone, to any material extent, is undeniable, at any rate until many years' healthy crops shall have given a return of confidence in its stability.

That is one view of the question: there is

still another, which can be shown without chance or speculation; it is this. Human or manual labour is unquestionably the most valuable of all motive powers, to the same extent of strength; being applicable in a greater variety of ways, owing to man's having the gift of reason. If, therefore, a horse be worth his sustenance, how much more so a man, whose labour given is more than equivalent to his food; or, in other words, he produces more than he consumes. Under a proper system, this must always be the case as long as men people the earth. As our machinery improves, to economise human labour, the poor man should have the benefit of it as well as the rich; and until the population exceeds the produce of a nation, it seems to me that emigration is unnecessary and wrong.

Admitted, then, that human beings are worth their keep, the next point is to provide the most economical diet, or maintain the greatest amount of stamina at the least cost. Potatoes are by no means such a diet. A man requires a certain amount of nutrition to feed his muscles; an under-fed man is as unprofitable as an under-fed horse, and all labouring men are under-fed

in Ireland, — however much potatoes they eat, this must still be the case. *The potato contains seventy-four parts of water! twenty-four parts of starch! two parts of salts! and two parts of nutritive matter!!!* Were the object to fatten, the starch will do that, but that alone; it gives no nutriment: so that for pigs it is a most valuable root, but for man, affords but two parts in one hundred of nutriment wherewith to keep up that necessary stamina to form a good labourer; so that taking an acre of good land as producing one hundred barrels of potatoes, or twenty barrels of wheat, we have five-fold the produce of potatoes, of which a man must eat three times as much as bread, to derive the same amount of starch, and an infinitely less amount of nutriment.

Does this not explain the oft-asked question, why Paddy, being the worst possible workman in his own country, is the best abroad? In England he is fed on the truly economical plan. As they manure the lands before they take away the produce, so must they first give food in a similar proportion before they receive labour. Paddy finds the beef and the bacon agree with him, and he is able to do the hardest possible

work, a bricklayer's labourer being one of the most dangerous and laborious of all occupations. He ascends from morning till night to the summits of the highest buildings in London, up an almost vertical ladder, rendered doubly dangerous by the heavy and awkward load with which he is encumbered, and passes along planks or parapet walls, at an elevation of fifty to a hundred feet above the ground, all the time heavily burdened; this is continued during an entire and long day, and at low wages,—princely, however, to what he is in the habit of receiving in Ireland. To the utmost limit of his strength, he will undertake work; indeed, all that is refused by the Englishman is accepted by him. A foreign railway company, a few months ago, advertised in the English papers for Irish labourers to work on their lines, where they would receive one-third more wages than the French people themselves were receiving. He would do the same amount of work at home if properly fed; but the principle is much the same as keeping a horse without his oats, and expecting him to get through his work the same as if well fed. The Irishman at the English harvest, or as a railway labourer, and

the London heavy goods or coal porter, are not excelled in their willingness or industry.

All vegetables are of a carbonaceous nature; indeed *the potato*, containing twenty-four parts of starch, and seventy-two parts of water, *is almost wholly charcoal*, into which, by a very simple process, it may be converted: the same in fruits, beet-root, and all vegetables and other substances containing saccharine matter; indeed the sugar, when diluted in water, is wholly converted into a stick of charcoal, by the admixture of a small portion of sulphuric acid, which obtains the precipitate. Now sugar, and all the substances from which it is derived, is fattening, but not nutritious; by eating so large a quantity of sugar the negroes are kept in good condition, but still they are, as a race, weak and effeminate. It is a curious fact that the more we are exposed to cold, the more fat is required to be eaten; thus the Esquimaux will live on, and highly relish, whale's blubber washed down by train-oil, as much as will a city alderman enjoy turtle or turbot seasoned with Moselle. This arises from the circumstance that the oxygen of the atmosphere, inhaled into the lungs, becomes heated by the

food, and converted into carbonic acid gas, which is exhaled; and, proportionably to the amount of fat we have eaten, to the same extent we are enabled to endure the cold.*

Thus, I think, it will be clearly seen why the Irishman is inferior as a workman at home, and it is a matter without doubt, that low wages are no saving. Of this we, who have been in the habit of applying largely human power in the construction of railways, are well aware. In some extensive works in the vicinity of London, with which I was connected, some unfortunate Poles, of every rank, were employed. There might have been seen the captain or colonel of a cavalry regiment filling the wheelbarrow for an English navigator. The Poles employed in numbers from charity earned, badly, 10*s.* per week; the Irishmen made 18*s.* to 1*l.* 1*s.*; and some of the strongest, who had time to become nerved by the English bacon, ranked with the English "navvy," and earned their 4*s.* 6*d.* and 5*s.* per day; and whether at task, or by the day,

* The above facts are fully treated upon by Dr. Semple, a very able lecturer on chemistry, and other similar subjects.

watched or unwatched, they accomplished the greatest amount of work, establishing the economy of good wages and nutritious diet. I think I have thus proved the case with which I set out,— that it is not laziness at home that prevents excess of labour, but an enervating diet, which abroad is discontinued, and with it his lassitude.

CHAP. IV.

ESTIMATES. — MANUAL LABOUR. — CARTAGE. — BAD ROADS. — WATER AND LAND CARRIAGE. — DRAINAGE.

ALMOST all subjects connected with Agricultural Engineering may be made matter of calculation, and that of a most simple nature, however abstruse they may at first appear. In all matters depending upon mechanical labour, and even in some cases with crops, it is decidedly advisable to make a comparative estimate of the profit and loss on each side, allowing for the value of money at, say, 15 per cent, or as it may at the time be worth. Some persons understand these principles perfectly, but nine out of ten know nothing about them; for such parties alone, of course, the following is written, and these kinds of easy arithmetical questions, as they may be called, form the basis of nearly every agricultural operation, showing the advantages of proposed alterations, and of improvements for their superior growth and culture of different crops.

By the help of a few tables of weights and measures, estimates and comparative calculations can readily be made. At present a farmer contemplates an alteration which he considers will be at the time, or in the end, a saving. He has neither the opportunity nor the desire to employ a professional man; generally the idea is abandoned; or when carried out, may be a considerable loss instead of saving. This arises from the fact that the only guide is some vague or indefinite idea that some alteration would be advisable, but an incompetence to arrive at the cost of the alteration or comparative advantages. I have no hesitation in saying that, by a little application, such parties, from their agricultural and local experience, would be much more competent than even an engineer; simply from knowing to a nicety their own requirements, and the value of lands in different states with or without such alterations.

MANUAL LABOUR.

The basis of all estimates is human labour; not so much the economy of wages, as the extra work accomplished by superior strength: by a

fair allowance of such labour a proper estimate can alone be effected.

Suppose a strong workman can dig twenty-eight pounds of clay at the level of his feet, and throw the same half his own height, three feet, on to a stage or cart, and this operation occupies fifteen seconds, of which I have taken the average, and calculated on the spot; allowing for gathering up the loose materials, rest, and fluctuating work, fifteen seconds, that is, about fifteen tons, or ten cubic yards, per day. Should this be required to be thrown from a drain six feet deep, a stage must be erected half way up, on which two men employed with the loose material could do the work of three beneath. In other words, in loose soil, loam, or sand, one-third more material could be removed; whilst in harder substances a proportionably less quantity will be removed. As in agricultural improvements the medium soils have to be dealt with, it would be easy to calculate the amount removed, either of manures or in trench-digging for drainage, or any other mode of spade labour; with a small book of size and weight tables, any calculation can be effected, — things very necessary, as every farmer is, to

a great extent, obliged to be his own engineer: —

28 lbs. or ¼ cwt. in 30 seconds equal
1 cwt. every 2 minutes, or - 30 cwt. per hour.
30 cwt per hour for 10 hours a day equal 300 cwt.
300 cwt. divided into tons by 20 equal 15 tons.

CARTAGE.

As in all cases on your own estates, you have both to fill, convey, and deposit, the calculation would of course be made only for the distance beyond them. First, toll bars, if any; secondly, the price at which you value your horses and your men on the lands, not what you pay them; these estimate by the length of time taken up going and coming; thirdly, the wear and tear of the horse and cart — unfortunately the man is not so valued. Assuming the rate of half per cent per month for the cart and harness*, the horse at one and a half per cent. per month, making in all two per cent. per month, and one month's work for two horses for, say a distance of ten miles, each making an alternate day's journey.

* Waggons should not be employed, as entailing the weight, friction, and wear and tear of four wheels instead of two.

A lower calculation than the following would be scarcely adequate, as the use of the farming stock ought to be worth at least fifteen per cent to their owner in the ordinary operations upon his land, and therefore should be rated at, at least, the same value in any other occupation. These figures are intended to illustrate the average amount, as there is the greatest difference in the value of horses. An underfed horse would scarcely do half the above work, so that it is impossible to apply a universal standard.

	s.
We have 1 man 30 days at 2*s.* per day, equal	60
Ditto 1 boy 30 ditto at 1*s.* ditto ditto	30
Two horses and 1 cart 30 ditto at 5*s.* ditto	150
Wear and tear of ditto, value £50, at 2 per cent. per month, £1 - -	20
Cost for one month or 26 working days	260

	£	s.	d.
	£13	0	0
or per day working expenses, carrying 1 load of 1 ton, at a cost of per ton	£0	10	0

BAD ROADS.

As has been stated, page 175., a bad road is a serious loss to a farmer. Not only does it require two horses to do the same amount of

work, but a horse worked with a heavy load on such a road will not last one-third of the time; it is worse than constantly travelling up a hill, which would only form the same steady pull as a heavier load. With uneven or rutty roads there is not only the hill and load, but a succession of jerks straining the horses to pieces, and constant wear and tear; the harness and vehicles not lasting half the proper length of time. It is always in a rut that a spoke, tire, or the tackle gives way. Besides all this, a road costs more to keep in bad repair than it would do to keep perfectly level and in good order.

Suppose a private road, one mile long, that 4*s*. per perch would put into good working order.

One mile containing 80 chains of 4 perches each, equal - - - - - -	320 perches.
320 perches at 4*s*. per perch, equal 1280*s*. or total cost - - - - - -	£64 0 0

Let us now consider whether it would be worth while to effect this improvement.

Supposing only 4 journeys per day are made upon this road, we have, deducting Sundays, 313 days by 4, equal per annum 1252 journeys, or - - - - -	2504 miles.
A horse will travel 8 miles with and 8 without a load alternately, or 16 miles per diem, on a good road, so that the 4 jour-	

neys or 8 miles, are half a day's work. Valuing the horse and cart and boy at 4*s.* per day (as shown page 205), every 4 journeys or 8 miles would cost - - £0 2 0

2504 miles divided by 8, equal 313 half days at 2*s.* each, or 626 days at - £31 6 0

£31 6*s.* worth of labour would be doubled on the improved road, so that in two years the repairs would be paid for — whereas there is at present a dead loss every 2 years of £31 6*s.*; without taking into consideration the injuries to the cart and horse detailed above.

Whilst I am upon the subject of roads, I would observe, that cutting away hills in some cases is a loss instead of a gain; an undulating road is far better for a horse than a level one, or a dead pull upon the collar. A horse, like a man, requires rest in employment; and change, to a certain extent, is rest. Ask a Lincolnshire coachman if the dead level stage is not a very heavy run. Many good roads were ruined last year by spoiling a good soling to cut down, perhaps, a two or three feet rise.

WATER AND LAND CARRIAGE.

One horse and cart, with man and boy, is worth 5*s.* per day to the farmer, as by preceding calculation, p. 205.

Supposing a quantity equal to 500 tons of manure to be removed a certain distance. Taking the distance as the same, either by land or by water; one day's journey

to the required point, and two back, equal to three days, carrying one ton, or a total cost of £375 for 500 tons of manure, exclusive of toll bars or any road expenses.

One flat boat 20 tons burthen, with two men, two days going empty against tide, rowing or sailing; and one day returning with load and tide, or three days at 2*s.* per diem each man, equal 12*s.*, with two days loading, equal to £1, or a total cost of £25 for the 500 tons, making a saving of fifteen-fold.

CALCULATION.*

	s.		*s.*
One horse and cart worth - - - -	3	Boat of 20 tons with two men three days going and returning, and three days loading, or five days at 2*s.* each man - -	20
Man per day - - -	2		
	5		
Three days' journey	3		
Cost for one load or ton	15	20*s.* cost for 20 tons, equal for 500 tons, 500*s.* or - £25 0 0	
Number of loads or tons to be carried	500		
Amt. in shillings	7500	Making, as above, a saving of 15 fold.	
Total - - -	£375		

I do not mean to say that this exact case has occurred within my knowledge, but one in the same proportion was about to take place, and this at once shows the value of water conveyance, wherever it can be obtained, for all heavy commodities.

* Reference from page 180.

To point out an instance that will still further illustrate this. A friend of mine intended reclaiming a valuable turf-bog, three miles in extent, and proposed forming a road of the same length, in order to carry the top-dressing and manure into the bog, which could only be obtained, as in most cases, on its margin. I at once advised a canal to be cut; the difference of estimates were as follows: —

About 3000 statute acres altogether required reclamation, but 1000 would have been directly benefited by the plan proposed.

We have 4840 superficial yards per acre requiring three inches deep of dressing; one superficial yard three inches deep, equals $\frac{1}{12}$ of a cubic yard, a depth of three feet; 4840 divided by 12 gives per acre - -	403⅓ cubic yds.
403⅓ cubic yards multiplied by 1000 acres - - - - - -	403,333⅓ cubic yds.
A horse would make five journeys per day, — one day bringing three cube yards, and the next two; averaging 2½ yds. per day, at a cost for man, boy, and horse, of - - -	5*s.* per day.
5*s.* divided by 2½ yds. or five half-yards equal for half cubic yard 1*s.*, or per cubic yard - - - - -	2*s.*
403333⅓ cubic yards at 2*s.* per yard, equal 806666*s.* 8*d.*, or - -	£40333 6*s.* 8*d.*

This amount requires to be halved, as the average lead from each end would be equal to $\frac{3}{4}$ mile, or one half of the above estimate, £20166 13*s.* 4*d.*

The ground being nearly a dead level, I proposed a canal fifteen feet wide and six feet deep to be formed; equal to ten yards to the yard forward, at 2*s.* per lineal yard.

Breadth five yards multiplied by two yards depth, equal ten cubic yards, at a cost of per yard forward - - -	2*s.*
1760 yards in a mile, equal in three miles	5280 yards.
5280 lineal yards at 2*s.* per yard, equal 10560*s.* or - - - - - -	£528 0 0

Now as this canal would convey at fifteen-fold less cost according to the former calculation (page 208.), we have 20166*l.* 13*s.* 4*d.* minus $\frac{1}{15}$ or 1344 8*s.* 10*d.*, equal a total saving of 18822*l.* 5*s.* $4\frac{1}{2}$*d.*

This shows the utter unacquaintance of many landholders with these subjects; indeed, until I made a calculation, I was by no means aware of the disparity which existed myself. Engineers are often deceived to a very great extent in guessing at estimates, particularly of comparative amounts; there are so many considerations, of one character or another, hidden on each side, that it is frequently impossible to arrive at even approximate truth, without the aid of figures.

DRAINAGE.

A piece of land is to be thorough-drained: its present worth is, say, three shillings per annum per acre; by thorough drainage its value would be equal to one pound per acre; it often realises three or five times that amount.

The object here is to find the cost of said improvements on the one side, and, on the other, the existing value of the land. We will proceed with one acre's estimate, and we must assume that local circumstances admit of the prices here subjoined.

One statute acre equal ten chains long and one broad, one chain equal 66 feet, or	22 yards.		
22 yards multiplied by ten chains equal	220 yards.		
Two sets drains thirty-three feet apart, the entire length, or 220 yards multiplied by 2, equal total length - -	440 yards.		
Cutting average three feet deep, and one foot broad, or three feet by three feet, equal nine feet per lineal yard, at 1*d.* — 440*d.* or - -	£1	16	8
Gathering on lands, carriage and placing broken stones in drains, and filling in at 1*d.* per yard - - -	1	16	8
Total cost of thorough drainage per acre	£3	13	4

Drains, it may be said, are seldom required so

close; deep draining, with continuous pipes, may be effected at the same cost as the above, and from that to fifty shillings per acre; but this drainage is five feet deep, and, thus being well under the land, is much more effectual than the old system. That is a cost of 1*l.* 13*s.* per acre for ordinary thorough drainage with broken stones; or, from that to 2*l.* 10*s.* for deep draining very wet clayey pastures, with the pipe-tiles. But as this requires an open drain or conductor to the nearest stream or sufficient outlet, and which benefits the entire property, it must be estimated for, and divided by the number of acres benefited, say 100.

Assuming main drain 900 yards long, 2 yards broad at top and 1 at bottom, equal 9 feet, or $4\frac{1}{2}$ feet average. It is $4\frac{1}{2}$ feet depth and $4\frac{1}{2}$ feet breadth; which multiplied give - -	20 feet 3 inches.
20 feet 3 inches multiplied by 900 yards length, equal 18225 yards, or	675 cubic yards.
675 cube yards at 3*d.* per yard -	168*s.* 9*d.*
168*s.* 9*d.* divided into 100 equal per acre - - - - - - -	1*s.* $8\frac{1}{4}$*d.*
1*s.* $8\frac{1}{4}$*d.* added to £13 13*s.* 4*d.* obtained above, equal total cost per acre -	£3 15 $0\frac{1}{4}$

Supposing the land required reclamation, you must add to the foregoing the cost of

cartage, as per estimate (page 204.), allowing the number of loads per acre, and the cost of digging, or, if manure, purchasing, at any particular spot; add that to the price of drainage per acre, and it will give you the entire cost of reclaiming, ready for the crops.

Say fifty loads of clay, marl, or road scrapings, or what is better if near rivers or slobs, alluvial deposits, as a top-dressing.

One mile carriage cost to the farmer, digging and bringing fifty loads at 6*d.* - -	£1	5	0
Cost of spreading and burning clay or breaking, 6*d.* per load - - - - - -	1	5	0
Cost of drainage as above - - -	3	15	0¼
Total cost of drainage and top-dressing at foregoing prices - - -	£6	5	0¼

I do not include the manure, as it properly comes out of the crop, and is as necessary an item as the quantity of seed.

The above is by no means a low estimate for ordinary land: but if bog or marsh, an allowance of half more must be made. Such improvements often pay in the first year for the entire outlay.

The above estimates can be modified in prices or amounts at pleasure, and may form bases of all kinds of farming calculations.

It is a general remark, *That* LANDED PROPERTY *is a respectable, but not a profitable investment.* This is a great mistake: land, at the full selling price, properly tilled and managed, is quite as profitable as either mines, railways, or any other mode of investment or commercial occupation.

I have heard some most worthy and clever men say they cannot induce the people to adopt improvements, of drainages and high farming. I would not hesitate to undertake the duty in the most disaffected part of Ireland, were I a proprietor; but it must first be done on a perfect principle of equity with the occupants; and this is alone the basis of success in every calling. The adoption of such a system would at once unite the Tenantry to their Landlords, as their sole friends and dependence: they would thereby have a sufficient stock to meet future famine, recalling once again the good old times of Irish hospitality, and by keeping the land in the highest state of fertility, effect the true prosperity of the nation.

THE END.

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